

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: John Alexander Edgar  
Title: ANTI CANCER AGENT AND  
METHOD OF TREATMENT OF  
CANCER  
Appl. No.: 10/088,078  
Filing Date: 07/22/2002  
Examiner: Unassigned  
Art Unit: Unassigned

**CLAIM FOR CONVENTION PRIORITY**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

The benefit of the filing date of the following prior foreign application filed in the following foreign country is hereby requested, and the right of priority provided in 35 U.S.C. § 119 is hereby claimed.

In support of this claim, filed herewith is a certified copy of said original foreign application:

- AUSTRALIAN Patent Application No. PQ 3148 filed 09/29/1999.

Respectfully submitted,

By S. A. Bent

Date July 22, 2002

FOLEY & LARDNER  
Customer Number 22428



22428

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Resub PCT/PTC 22 JUL 2002

**Patent Office  
Canberra**

I, LEANNE MYNOTT, MANAGER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PQ 3148 for a patent by COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION filed on 29 September 1999.

WITNESS my hand this  
Twenty-second day of May 2002

  
LEANNE MYNOTT  
MANAGER EXAMINATION SUPPORT  
AND SALES



**AUSTRALIA**  
**Patents Act 1990**

**PROVISIONAL SPECIFICATION**

Invention Title: ANTI CANCER AGENT AND METHOD OF  
TREATMENT OF CANCER

Applicant: COMMONWEALTH SCIENTIFIC &  
INDUSTRIAL RESEARCH ORGANISATION

The invention is described in the following statement.

## ANTI CANCER AGENT AND METHOD OF TREATMENT OF CANCER

The present invention relates to the treatment of cancer and to compositions for use in treatment of cancer.

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The search for anti-cancer agents has been, and remains, a major endeavour of the pharmaceutical industry, academic institutions and government agencies throughout the world. One of the significant problems with many cancer treatments is the severe adverse affects they have on the patient and non-cancerous tissues.

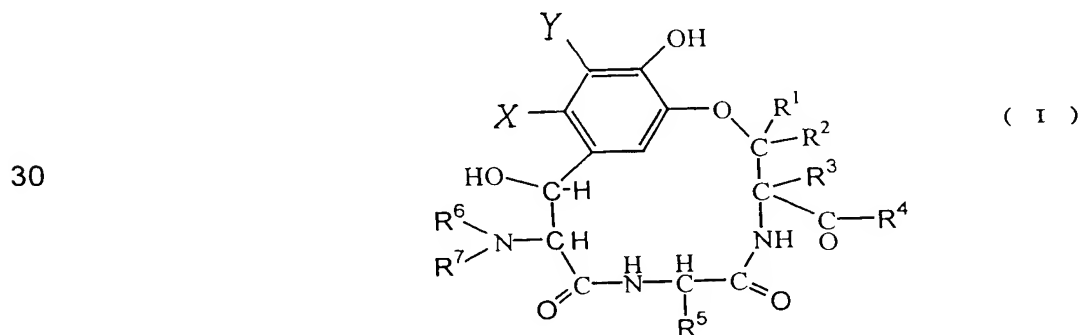
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We have now found that phomopsin mycotoxins (hereafter referred to as phomopsins) and their derivatives exhibit potent anticancer activity. We have also found that phomopsins exhibit selective activity against liver cancer. Without wishing to be bound by theory we believe that phomopsins exhibit selectivity for liver cancers due to a tendency of phomopsin to accumulate in the liver. It will be appreciated that the selectivity of phomopsin in treatment of liver cancer is a significant advantage as it allows liver cancers to be targeted while minimising the effects on other tissues.

Phomopsin may however be utilised in treatment of cancers other than liver cancer by selecting formulations or derivatives of phomopsin which enhance selectivity of the drug for certain types of cancer cells or certain types of cancers. Derivatives of phomopsins may be formed which are conjugates with monoclonal antibodies. The monoclonal antibody may be produced by known methods to provide selectivity for cancer cells.

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Phomopsins are characterised by a 13-member ring structure generally of formula I



wherein

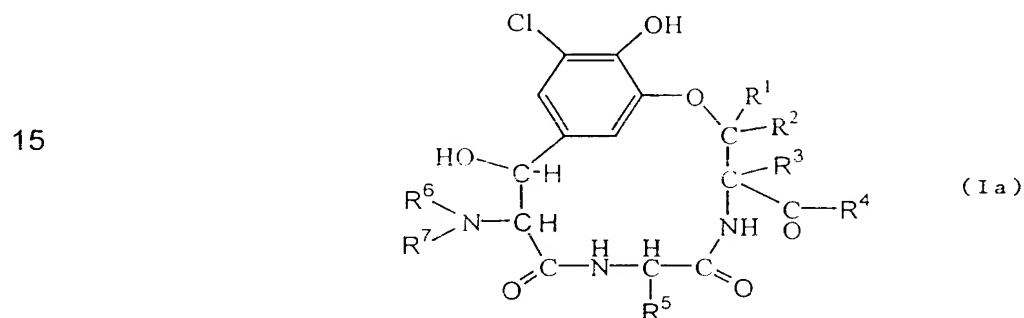
R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup> and R<sup>7</sup> are optional substituents and may be independently selected from the group consisting of hydrogen, aliphatic, aromatic, peptide chains and halogen.

5 X is aliphatic, hydrogen or halogen (preferably hydrogen); and

Y is aliphatic, hydrogen or halogen (preferably chlorine);

where present a peptide chain may be conjugated with a monoclonal antibody (Mab).

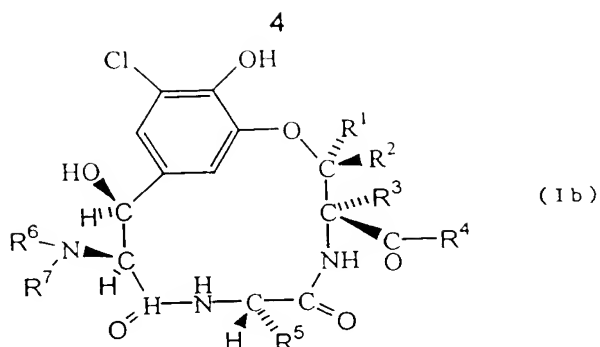
10 The preferred phomopsins and phomopsin derivatives are those containing the group of formula Ia:



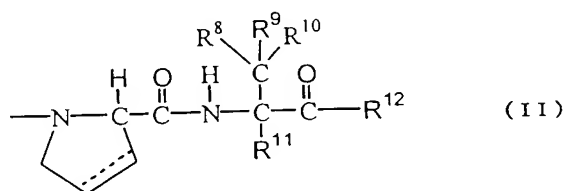
20 In formula I and Ia R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, R<sup>6</sup> and R<sup>7</sup> may typically be independently selected from hydrogen and aliphatic and R<sup>4</sup> is generally a peptide. In one embodiment R<sup>4</sup> is a peptide conjugated with an antibody, particularly a monoclonal antibody (Mab). More preferably R<sup>1</sup>, R<sup>2</sup>, R<sup>5</sup> and R<sup>6</sup> are lower aliphatic and R<sup>3</sup> and R<sup>7</sup> are hydrogen. Even more preferably R<sup>1</sup>, R<sup>2</sup> and R<sup>6</sup> are lower alkyl and R<sup>6</sup> is

25 lower alkyl or lower alkenyl. Most preferably R<sup>1</sup> is ethyl, R<sup>2</sup> is methyl, R<sup>3</sup> is hydrogen, R<sup>5</sup> is isopropyl or iso-propenyl and R<sup>6</sup> is methyl. Where used herein the terms lower aliphatic, lower alkyl and, lower alkenyl include groups containing up to six carbon atoms and most preferably up to 4 carbon atoms.

30 The preferred stereochemistry of the compounds of formula Ia is as shown in formula Ib:



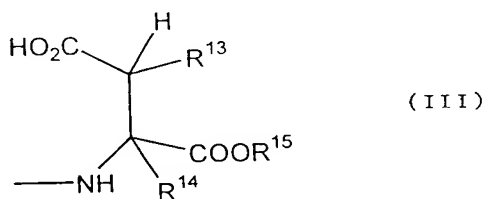
The group  $R^4$  is a peptide preferably a di- or tri-peptide which may be optionally bound to an antibody such as a monoclonal antibody. The preferred group  $R^4$  has the formula II:



wherein the dotted line represents an optional double bond;

$R^8$  and  $R^9$  are independently selected from hydrogen and lower alkyl and more preferably  $R^8$  is methyl and  $R^9$  is ethyl;

$R^{12}$  is selected from the group consisting of amino, mono substituted amino, disubstituted amino and an amino acid residue particularly the group of formula III:



wherein  $R^{13}$  and  $R^{14}$  are hydrogen or together form a double bond and  $R^{15}$  is selected from the group consisting of hydroxy, amino, substituted amino or an antibody particularly Mab.

When  $R^{15}$  is an antibody or linked to an antibody it is preferred that  $R^{13}$  and  $R^{14}$  form a double bond providing a dehydroaspartic acid residue. A dehydroaspartic acid residue has been found to facilitate delivery of phomopsin via a Mab conjugate.

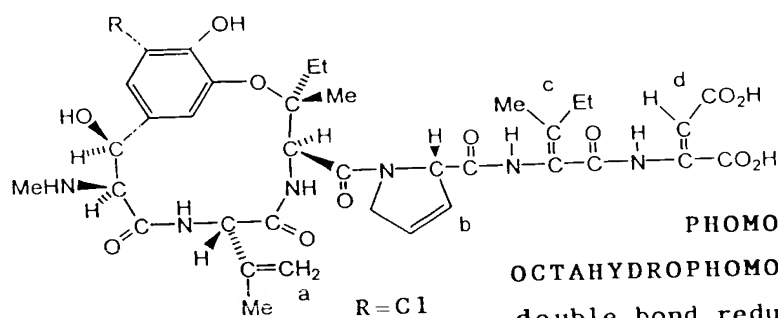


The carbon-nitrogen bond in the residue of formula III is relatively weak enabling an active phomopsin of formula Ia (wherein in the group of formula II R<sup>12</sup> is amino) to be released from the MAb once it becomes bound to cancer cells.

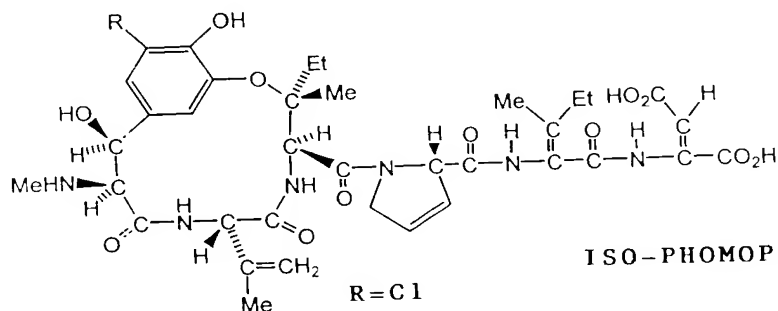
- 5 The most preferred phomopsin compounds are selected from phomopsin A, octahydrophomopsin A, iso-phomopsin and phomopsinamine A. These compounds have the formula set out below:

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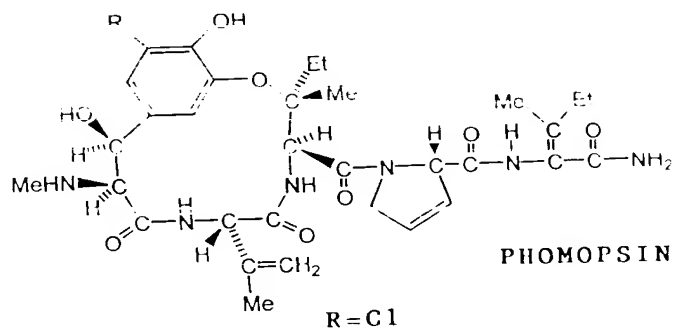


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In one aspect the invention provides a pharmaceutical composition for treatment of cancer, preferably liver cancer, containing a phomopsin compound or derivative thereof or pharmaceutically acceptable salt of the phomopsin or derivative and a pharmaceutically acceptable carrier.

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Salts of phomopsin such as the alkaline metal salts are reasonably water soluble. Aqueous solutions can be formed by dissolving the phomopsin in a dilute base such as sodium hydroxide to provide a neutral solution.

- 10 In another aspect the invention provides a method of treatment of a patient suffering cancer including administering to the patient a phomopsin compound or derivative thereof or pharmaceutically acceptable salt of the phomopsin or derivative.

The phomopsin compound may be administered by a variety of methods including  
15 oral administration in the form of a syrup, capsule, tablet or the like, by injection or by intravenous infusion.

Preferably the compound is administered by intravenous infusion

- 20 In a further aspect the invention provides the use of a phomopsin compound as hereinbefore described for preparation of a pharmaceutical composition for treatment of cancer and in particular liver cancer.

Phomopsin compounds are produced by certain fungi, including Diaporthe toxicus  
25 (formerly Phomopsis leptostromiformis) and Phomopsis emicis, or may be derived from these natural products.

The isolation of phomopsin A is described by C. Culvenor, J. Edgar and M. Mackay, Tetrahedron Vol. 45, No. 8 pp 2351 (1989). Preparation of derivatives of  
30 phomopsins such as octahydrophomopsins are described by J. Edgar, J. Frahn, P. Cockrum and J. Culvenor in the paper "Lupinosis. The Chemistry and Biochemistry of the Phomopsins" Mycotoxins and Phycotoxins, collection of invited papers presented at the sixth International IUPAC Symposium on Mycotoxins and Phycotoxins, Pretoria, Rep. South Africa, 22-25 July 1985.

The activity of phomopsin is believed to be due in part to the strong binding of the compound to tubulin. This may disrupt cell mitosis by inhibiting tubulin formation and cause depolymerization of formed microtubules. It may be preferred in some cases to use phomopsin in combination therapy with one or more other anticancer drugs or therapies. The drugs used in combination with phomopsin may be selected to enhance results by providing complementary activity in binding to microtubules. Examples of possible drugs for use in combination with phomopsin include paclitaxel, vinblastine, vincristine and alkaloids.

The present invention will now be more fully described with reference to the following examples. It should be understood, however, that the description following is illustrative only and should not be taken in any way as a restriction on the generality of the invention described above.

#### Example 1

The following data demonstrate, the anticancer activity of phomopsin A, octahydrophomopsin A, iso-phomopsin A and phomopsinamine A against 60 human cancer cell lines *in vitro*. Phomopsin A and octahydrophomopsin A were obtained by the method as described in the references referred to above.

Iso-phomopsin A and phomopsinamine were prepared as follows:

#### ISOLATION OF PHOMOPSIN A

##### **Background:**

The extraction process is designed to minimise difficulty and cost. The fermented seed is continuously extracted with recycling 15% methanol:water through an in line XAD (styrene divinylbenzene copolymer) column. The time required for adsorption of phomopsin A onto the XAD is quite lengthy, but requires minimal operator input. The timing of this step is not critical, hence can be adapted to suite operating conditions.

The phomopsin A has a relatively low solubility in 15% methanol. The procedure relies on the adsorption of phomopsin A on the XAD resin driving the solubility equilibrium of phomopsin A in the fermented seed toward dissolution. This

procedure reduces solvent usage, volumes to be handled and flammability hazards. The alternate method of extraction, without recycling would use 150+ litres of pure methanol for the initial extraction, involve a further concentration step (or dilution of the methanol extract to 900+L) then adsorption onto XAD. The current procedure  
 5 uses 12 L methanol, requires minimal operation input for the adsorption phase and uses far less solvent (total volume 85L instead of 900+L).

The elution of the concentrated phomopsin A from the column is the first step in a 3 stage isolation to produce crystalline phomopsin A of 80-90% purity.

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Phomopsin may be eluted from the collection using 15% methanol as a preliminary wash and 100% methanol to complete elution. Silica gel flash column chromatography may be used for purification. The column is conditioned using 5:95 ammonia:isopropanol and the concentrate dissolved in a minimum of 20:65:15  
 15 ammonia:isopropanol:water. Phomopsin is eluted using this 3 solvent combination. Recrystallisation from boiling glacial acetic acid provides phomopsin in 80-90% purity.

#### PREPARATION OF *iso*-PHOMOPSIN A

##### 20 **Materials:**

0.05M HgCl<sub>2</sub>: 280 mg HgCl<sub>2</sub> dissolved in 2 ml H<sub>2</sub>O (+50 µl 10M HCl).

Phomopsin A: 18.3 mg PhA dissolved in 2 ml H<sub>2</sub>O (with puff of NH<sub>3</sub>).

1M HCl

##### **Method:**

25 Phomopsin A (2.0 ml) was mixed with 0.05M HgCl<sub>2</sub> (1 ml) and 1M HCl (200 µl), total volume 3.2 ml, and left at room temperature for 5 hours. The solution was diluted to 8 ml then passed through a prepared C18 Maxi-clean SPE cartridge (900 mg) and washed with 7-8 ml H<sub>2</sub>O. The Maxi-clean was then eluted with 8-9 ml MeOH and made to 10 ml. The aqueous eluate from the first C18 cartridge was reprocessed  
 30 through a second C18 cartridge to check whether the first cartridge was overloaded. The MeOH eluate from the second cartridge had very little residue on drying and was not included in further processing.

The methanol eluate was evaporated to dryness and subject to HPLC analysis and preparative HPLC.

Needle contamination with mercuric chloride was enough to cause almost complete conversion to iso-phomopsin. A needle used for a solution containing mercuric chloride could not be used for phomopsin, even with exhaustive washing. The phomopsin -  $\text{HgCl}_2$  reaction mixture could be pumped back and forth through a disposable needle (20-30 times), a sample removed for assay, and the remainder of the sample left at RT for 5 hours, with hourly sampling (if necessary).

#### PREPARATION OF PHOMOPSINAMINE

Phomopsin A (15.3 mg) was dissolved in 1M HCl and left at RT for 28 hours. The reaction mixture was diluted to 8 ml then passed through a strong anion exchange cartridge (SAX, 600 mg) to remove any unreacted phomopsin A (pH of solution expected to be @ 1.52). The aqueous eluate (+ washings) was then passed through a prepared C18 cartridge (900 mg), washed with  $\text{H}_2\text{O}$  (10 ml) then eluted with methanol (10 ml).

The methanol eluate was evaporated to dryness subject to HPLC analysis and preparative HPLC.

This method may be modified by sampling the reaction mixture after 5-6 hours, 24 hours and 28-30 hours. All washings and eluates may be assayed by HPLC to monitor the conversion of phomopsin to phomopsinamine.

The methods used are those employed by the United States National Cancer Institute (NCI) as a primary screen for discovering compounds with anticancer potential (Boyd and Paull, 1995). The data are presented in the standard format used by NCI to show, for each compound tested, the absolute and relative sensitivity of individual cancer cell lines to the compounds and to demonstrate reproducible and selective effects.

#### HOLLOW FIBER ASSAY FOR PRELIMINARY *IN VIVO* TESTING

The Biological Testing Branch of the Developmental Therapeutics Program has adopted a preliminary *in vivo* screening tool for assessing the potential anticancer activity of compounds identified by the large scale *in vivo* cell screen. For these assays, human tumour cells are cultivated in polyvinylidene fluoride (PVDF) hollow fibers, and a sample of each cell line is implanted into each of two physiologic compartments (intraperitoneal and subcutaneous) in mice. Each test mouse receives a total of 6 fibers (3 intraperitoneally and 3 subcutaneously) representing 3 distinct cancer cell lines. Three mice are treated with potential antitumor compounds at each of 2 test doses by the intraperitoneal route using a QD x 4 treatment schedule. Vehicle controls consist of 6 mice receiving the compound diluent only. The fiber cultures are collected on the day following the last day of treatment. To assess anticancer effects, viable cell mass is determined for each of the cell lines using a formazan dye (MTT) conversion assay. From this, the %T/C can be calculated using the average optical density of the compound treated samples divided by the average optical density of the vehicle controls. In addition, the net increase in cell mass can be determined for each sample as a sample of fiber cultures are assessed for viable cell mass on the day of implantation into mice. Thus, the cytostatic and cytocidal capacities of the test compound can be assessed.

Generally, each compound is tested against a minimum of 12 human cancer cell lines. This represents a total of 4 experiments since each experiment contains 3 cell lines. The data are reported as %T/C for each of the 2 compound doses against each of the cell lines with separate values calculated for the intraperitoneal and subcutaneous samples.

Compounds are selected for further *in vivo* testing in standard subcutaneous xenograft models on the basis of several hollow fiber assay criteria. These include: (1) a % T/C of 50 or less in 10 of the 48 possible test combinations (12 cell lines X 2 sites X 2 compound doses); (2) activity at a distance (intraperitoneal drug/subcutaneous culture) in a minimum of 4 of the 24 possible combinations; and/or (3) a net cell kill of 1 or more cell lines in either implant site. To simplify evaluation, a points system has been adopted which allows rapid viewing of the activity of a given compound. For this, a value of 2 is assigned for each compound dose which results in a 50% or greater reduction in viable cell mass. The

intraperitoneal and subcutaneous samples are scored separately so that criteria (1) and (2) can be evaluated. Compounds with a combined IP+SC score  $\geq 20$ , a SC score  $\geq 8$  or a net cell kill of one or more cell lines are referred for xenograft testing. These criteria were statistically validated by comparing the activity outcomes of > 80 randomly selected compounds in the hollow fiber assay and in the xenograft testing. This comparison indicated that there was a very low probability of missing an active compound if the hollow fiber assay were used as the initial *in vivo* screening tool. In addition to these criteria, other factors (e.g. unique structure, mechanism of action) may result in referral of a compound for standard xenograft testing without the compound meeting these criteria.

### **SCREENING DATA REPORT COMPONENTS**

#### **The Calculated Measurement of Effect: Percentage Growth (PG)**

The measured effect of the compound on a cell line is currently calculated according to one or the other of the following two expressions:

If  $(\text{Mean OD}_{\text{test}} - \text{Mean OD}_{\text{tzero}}) \geq 0$ , then

$$\text{PG} = 100 \times (\text{Mean OD}_{\text{test}} - \text{Mean OD}_{\text{tzero}}) / (\text{Mean OD}_{\text{ctrl}} - \text{Mean OD}_{\text{tzero}})$$

If  $(\text{Mean OD}_{\text{test}} - \text{Mean OD}_{\text{tzero}}) < 0$ , then

$$\text{PG} = 100 \times (\text{Mean OD}_{\text{test}} - \text{Mean OD}_{\text{tzero}}) / \text{Mean OD}_{\text{tzero}}$$

Where:

Mean OD<sub>tzero</sub> = The average of optical density measurements of SRB-derived color just before exposure of cells to the test compound.

Mean OD<sub>test</sub> = The average of optical density measurements of SRB-derived color after 48 hours exposure of cells to the test compound.

Mean OD<sub>ctrl</sub> = The average of optical density measurements of SRB-derived color after 48 hours with no exposure of cells to the test compound.

#### **The Data Sheet:**

This page of the data package represents the experimental data collected against each cell line. The first two columns describe the subpanel (e.g. leukemia) and cell line (e.g. CCRF-CEM) involved. The next two columns list the Mean OD<sub>tzero</sub> and Mean OD<sub>ctrl</sub>; the next five columns list the Mean OD<sub>test</sub> for each of five different concentrations. Each concentration is expressed as the log<sub>10</sub> (molar or

$\mu\text{g/ml}$ ). The next five columns list the calculated PGs for each concentration. The response parameters G150, TG1, and LC50 are interpolated values representing the concentrations at which the PG is +50, 0, and -50, respectively. Sometimes these response parameters cannot be obtained by interpolation. If, for instance, all of the PGs in a given row exceed +50, then none of the three parameters can be obtained by interpolation. In such a case, the value given for each response parameter is the highest concentration tested and is preceded by a ">" sign. This practice is extended similarly to the other possible situations where a response parameter cannot be obtained by interpolation.

### **Dose-Response Curves:**

The dose-response curve page of the data package is created by plotting the PGs against the  $\log_{10}$  of the corresponding concentration for every cell line. The cell line curves are grouped by subpanel. Horizontal lines are provided at the PG values of +50, 0, and -50. The concentrations corresponding to points where the curves cross these lines are the G150, TG1, and LC50, respectively.

### **The Mean Graphs:**

Mean graphs facilitate visual scanning of data for potential patterns of selectivity for particular cell lines or for particular subpanels with respect to a selected response parameter. Differences in apparent selectivity patterns may occur for the same compound against the same cell lines when different parameters are compared. The mean graphs page of the data package shows mean graphs at each of the principal response parameters: G150, TG1, and LC50. Bars extending to the right represent sensitivity of the cell line to the test agent in excess of the average sensitivity of all tested cell lines. Since the bar scale is logarithmic, a bar 2 units to the right implies the compound achieved the response parameter (e.g. G150) for the cell line at a concentration one-hundredth the mean concentration required over all cell lines, and thus the cell line is unusually sensitive to that compound. Bars extending to the left correspondingly imply sensitivity less than the mean. If, for a particular drug and cell line, it was not possible to determine the desired response parameter by interpolation, the bar length shown in either the highest concentration tested (and the listed  $\log_{10}$  of the



response parameter will be preceded by a ">") or the lowest concentration tested (and the listed  $\log_{10}$  will be preceded by a "<").

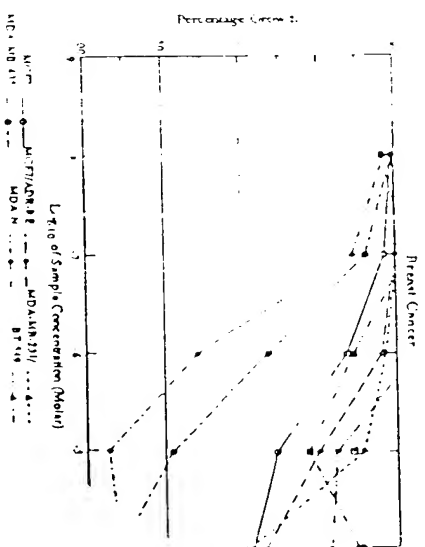
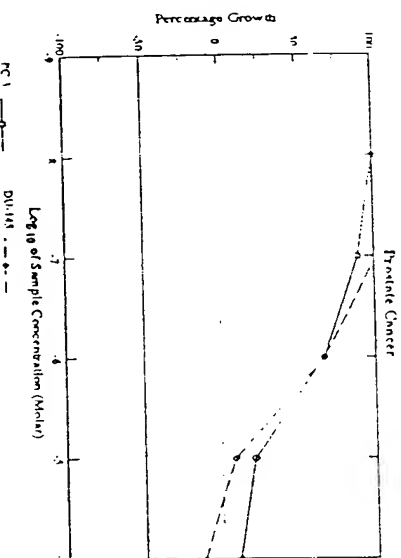
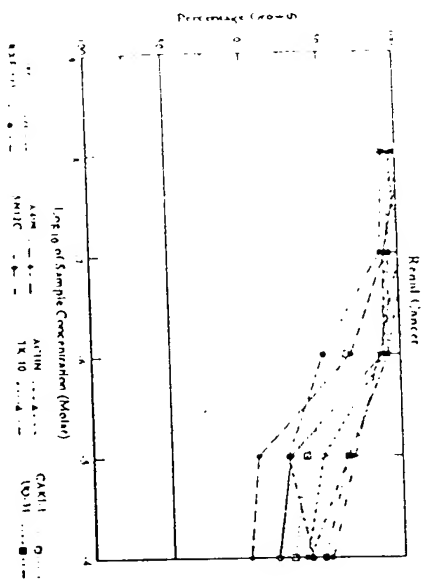
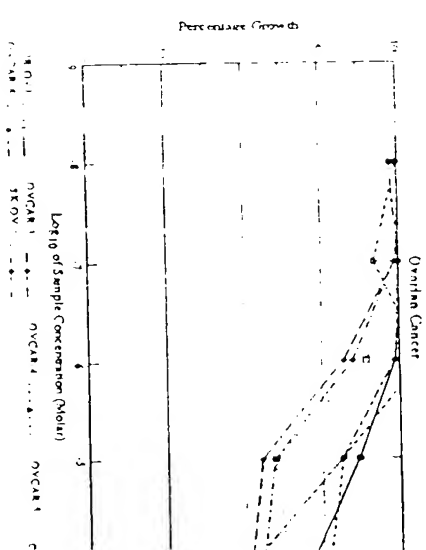
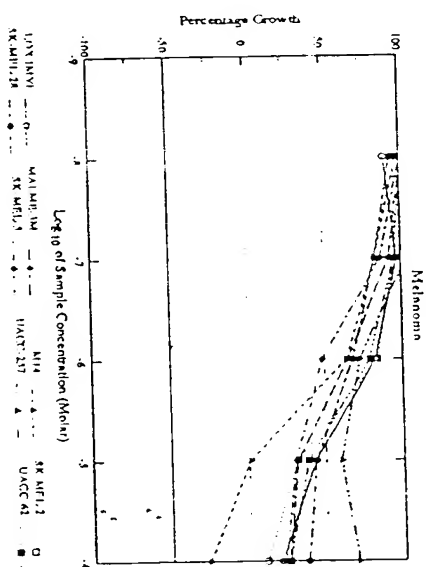
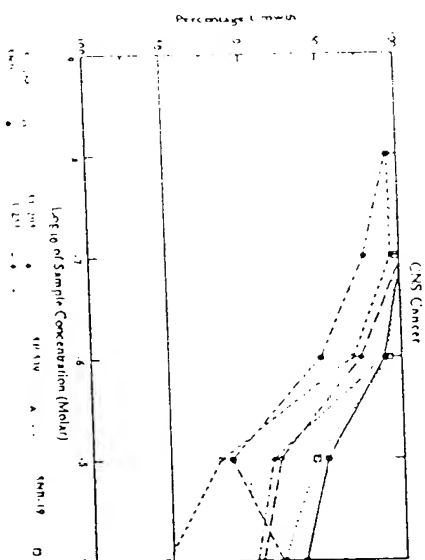
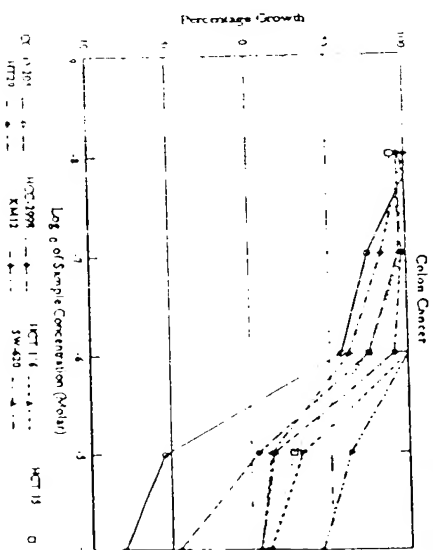
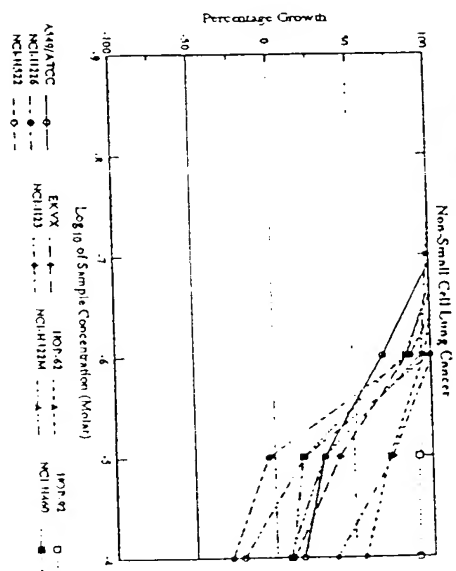
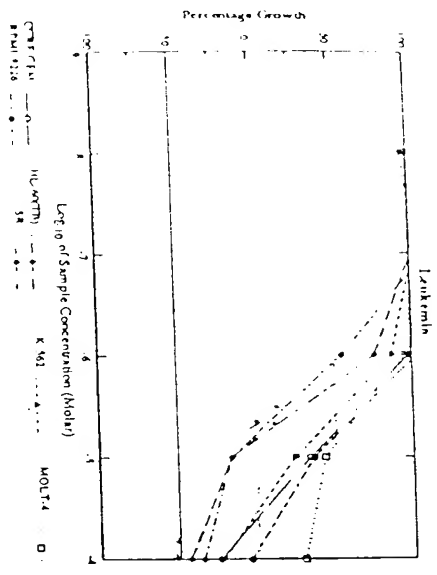
- 5 The values at either limited (> or <) are also calculated in the mean used for the mean graph. Therefore, the mean used in the mean graph may not be the actual mean of the G150, for instance. For this reason, we shall refer to this value as the MG-MID (for mean graph midpoint).

# National Cancer Institute Developmental Therapeutics Program

## In-Vitro Testing Results

NCI-63162-H/0-2/9	Experiment ID: 9502RM16	Test Type: 8	Units: Molar
Report Date: March 28, 1995	Test Date: February 13, 1995	QNS: SHP	MC:
DMI: Phomopsin A	Stain Reagent: Dual-Pass	SSPL: 0HLC	

Panel/Cell Line	Time	Mean Optical Densities					Log10 Concentration					Percent Growth					GI50	TGI	LC50
		Zero	Ctrl	-6.0	-7.0	-8.0	-9.0	-10.0	-11.0	-12.0	-13.0	-14.0	-15.0	-16.0	-17.0	-18.0			
Leukemia																			
CCRF-CEM	0.634	1.661	1.646	1.741	1.640	0.979	0.479	99	106	98	34	-24	5.55E-06	3.79E-05	>1.00E-04				
HL-60 (TB)	0.592	1.636	1.651	1.645	1.363	0.494	0.337	101	101	76	-17	-43	1.90E-06	6.62E-06	>1.00E-04				
K-562	0.362	1.209	1.161	1.227	1.101	0.560	0.294	97	102	87	24	-23	3.66E-06	3.24E-05	>1.00E-04				
MOLT-4	0.666	1.747	1.733	1.761	1.698	1.143	0.995	99	103	95	43	24	7.33E-06	>1.00E-04	>1.00E-04				
RPMI-8226	0.735	1.450	1.531	1.516	1.472	0.992	0.700	111	109	103	36	-5	6.16E-06	7.61E-05	>1.00E-04				
SR	0.466	0.856	0.923	0.896	0.686	0.406	0.315	116	111	54	-16	-35	1.15E-06	5.66E-06	>1.00E-04				
Non-Small Cell Lung Cancer																			
A549/ATCC	0.377	1.362	1.363	1.369	1.055	0.681	0.546	102	103	69	31	17	3.14E-06	>1.00E-04	>1.00E-04				
EKVX	0.402	0.935	0.946	0.966	0.854	0.616	0.461	102	104	85	47	11	6.09E-06	>1.00E-04	>1.00E-04				
HOP-62	0.391	0.953	0.974	0.955	0.931	0.796	0.705	104	104	96	74	59	>1.00E-04	>1.00E-04	>1.00E-04				
HOP-92	0.761	1.260	1.329	1.350	1.309	1.217	1.211	114	116	110	91	59	>1.00E-04	>1.00E-04	>1.00E-04				
NCI-H226	0.607	0.690	0.910	0.946	0.854	0.562	0.435	107	121	67	-4	-26	2.55E-06	>1.00E-04	>1.00E-04				
NCI-H23	0.419	1.205	1.246	1.224	1.214	1.003	0.717	105	103	101	74	36	4.65E-05	>1.00E-04	>1.00E-04				
NCI-H322M	0.624	1.629	1.653	1.612	1.567	0.931	0.702	102	98	94	30	8	4.92E-06	>1.00E-04	>1.00E-04				
NCI-H460	0.181	1.131	1.155	1.235	0.972	0.349	0.271	103	111	83	18	9	3.21E-06	>1.00E-04	>1.00E-04				
NCI-H522	0.413	0.954	0.966	0.963	0.952	0.513	0.326	103	105	100	16	-21	4.06E-06	2.97E-05	>1.00E-04				
Colon Cancer																			
COLO 205	0.326	1.242	1.303	1.010	0.849	0.151	0.066	107	75	57	-54	-79	1.15E-06	3.26E-06	9.21E-06				
HCC-2996	0.590	1.321	1.284	1.263	1.134	0.621	0.319	95	95	74	4	-46	2.23E-06	1.21E-05	>1.00E-04				
HCT-116	0.161	1.236	1.209	1.265	1.245	0.506	0.279	97	102	104	32	11	5.47E-06	>1.00E-04	>1.00E-04				
HCT-15	0.317	1.751	1.611	1.714	1.383	0.697	0.466	90	97	74	26	10	3.23E-06	>1.00E-04	>1.00E-04				
HT29	0.166	0.659	0.822	0.636	0.796	0.264	0.200	95	97	91	14	5	3.42E-06	>1.00E-04	>1.00E-04				
RM12	0.294	1.232	1.230	1.076	0.675	0.411	0.341	100	83	62	11	5	1.74E-06	>1.00E-04	>1.00E-04				
SK-620	0.156	1.016	0.962	1.077	1.023	0.692	0.533	96	107	101	62	44	4.56E-05	>1.00E-04	>1.00E-04				
CNS Cancer																			
SF-266	0.463	1.301	1.314	1.311	1.210	0.692	0.764	101	101	69	51	36	1.19E-05	>1.00E-04	>1.00E-04				
SF-295	0.400	1.077	1.122	1.066	0.900	0.540	0.454	107	102	74	21	6	2.61E-06	>1.00E-04	>1.00E-04				
SF-539	0.367	0.666	0.654	0.856	0.730	0.317	0.176	94	94	69	-16	-54	1.64E-06	6.17E-06	7.79E-05				
SNB-19	0.571	1.452	1.394	1.429	1.363	0.960	0.762	93	97	92	44	22	7.56E-06	>1.00E-04	>1.00E-04				
SNB-75	0.361	0.626	0.610	0.571	0.500	0.339	0.432	93	77	46	-11	21	6.46E-07	.	>1.00E-04				
U251	0.159	0.651	0.653	0.663	0.776	0.302	0.225	100	102	69	16	4	3.40E-06	>1.00E-04	>1.00E-04				
Melanoma																			
LOX IMVI	0.191	1.076	0.966	1.053	0.922	0.574	0.372	90	97	62	43	20	6.71E-06	>1.00E-04	>1.00E-04				
MALME-3M	0.464	0.952	0.956	0.914	0.760	0.619	0.566	101	92	65	32	25	2.76E-06	>1.00E-04	>1.00E-04				
M14	0.196	0.527	0.521	0.472	0.406	0.198	0.144	96	63	64	0	-27	1.65E-06	1.04E-05	>1.00E-04				
SK-MEL-2	0.746	1.404	1.383	1.375	1.297	0.954	0.616	97	95	84	32	11	4.45E-06	>1.00E-04	>1.00E-04				
SK-MEL-26	0.576	1.271	1.229	1.152	1.047	0.679	0.636	94	63	66	44	37	5.43E-06	>1.00E-04	>1.00E-04				
SK-MEL-5	0.034	1.051	1.053	0.916	0.522	0.344	0.264	100	87	48	30	23	6.89E-07	>1.00E-04	>1.00E-04				
UACC-257	0.536	1.126	1.205	1.145	0.962	0.689	0.946	113	104	72	60	70	>1.00E-04	>1.00E-04	>1.00E-04				
UACC-62	0.577	1.790	1.796	1.735	1.533	1.043	0.667	101	95	79	36	26	5.17E-06	>1.00E-04	>1.00E-04				
Ovarian Cancer																			
IGR-OV1	0.515	1.761	1.746	1.761	1.726	1.429	1.069	99	102	97	73	44	6.43E-05	>1.00E-04	>1.00E-04				
OVCAR-3	0.293	0.611	0.620	0.796	0.623	0.350	0.313	102	97	64	11	4	1.62E-06	>1.00E-04	>1.00E-04				
OVCAR-4	0.467	1.061	1.074	0.964	1.167	0.652	0.600	99	64	114	63	54	>1.00E-04	>1.00E-04	>1.00E-04				
OVCAR-5	0.393	0.862	0.866	0.672	0.761	0.485	0.516	101	102	76	20	27	3.05E-06	>1.00E-04	>1.00E-04				
OVCAR-6	0.267	0.947	0.914	0.943	0.925	0.692	0.320	95	95	97	61	1	1.69E-05	>1.00E-04	>1.00E-04				
SK-OV-3	0.466	0.975	0.995	0.962	0.621	0.565	0.525	104	97	70	19	11	2.45E-06	>1.00E-04	>1.00E-04				
Renal Cancer																			
766-0	0.200	0.915	0.949	0.640	0.626	0.389	0.325	105	90	86	26	16	4.14E-06	>1.00E-04	>1.00E-04				
A496	1.061	1.567	1.550	1.524	1.406	1.109	1.079	96	91	67	6	0	1.69E-06	9.31E-05	>1.00E-04				
ACHN	0.406	1.356	1.412	1.309	1.267	0.661	0.759	101	91	69	46	36	6.65E-06	>1.00E-04	>1.00E-04				
CAKI-1	0.466	0.940	0.691	0.664	0.762	0.641	0.597	90	66	65	37	26	3.07E-06	>1.00E-04	>1.00E-04				
RUF-393	0.704	1.545	1.469	1.436	1.113	0.913	1.034	91	67	49	25	39	5.20E-07	>1.00E-04	>1.00E-04				
SH12C	0.371	1.274	1.312	1.309	1.202	0.950	0.711	104	104	82	64	31	3.41E-05	>1.00E-04	>1.00E-04				
TK-10	0.627	1.221	1.166	1.227	1.134	1.032	0.939	94	101	65	66	55	>1.00E-04	>1.00E-04	>1.00E-04				
UO-31	0.593	1.442	1.424	1.367	1.369	1.134	0.997	96	94	91	64	46	7.06E-05	>1.00E-04	>1.00E-04				
Prostate Cancer																			
PC-3	0.302	1.096	1.092	1.010	0.625	0.465	0.360	100	86	66	20	10	2.23E-06	>1.00E-04	>1.00E-04				
DU-145	0.339	1.061	1.122	1.073	0.617	0.396	0.296	106	102	66	6	-13	1.69E-06	2.42E-05	>1.00E-04				
Breast Cancer																			
MCF7	0.423	1.174	1.156	1.115	0.924	0.563	0.465	96	92	67	21	6	2.33E-06	>1.00E-04	>1.00E-04				
MCF7/ADR-RES	0.330	0.907	0.696	0.904	0.847	0.609	0.407	99	99	90	46	18	5.19E-06	>1.00E-04	>1.00E-04				
MDA-MB-231/ATCC	0.406	0.860	0.954	0.965	0.919	0.634	0.421	99	101	93	77	1	2.31E-05	>1.00E-04	>1.00E-04				
HS 578T	0.664	1.319	1.337	1.350	1.324	1.165	1.205	104	107	101	71	75	>1.00E-04	>1.00E-04	>1.00E-04				
MDA-MB-435	0.320	0.961	0.966	0.647	0.427	0.174	0.065	96	60	16	-46	-60	1.53E-07	1.63E-06	1.34E-05				
MDA-N	0.214	0.752	0.715	0.596	0.152	0.030	0.045	93	71	-29	-66	-79	1.62E-07	5.11E-07	2.32E-06				
BT-549	0.476	0.621	0.622	0.693	0.665	0.664	0.666	100	121	112	60	56	>1.00E-04	>1.00E-04	>1.00E-04				
T-47D	0.711	2.002	1.666	2.094	1.626	1.252	1.655	91	107	71	42	73	.	>1.00E-04	>1.00E-04				



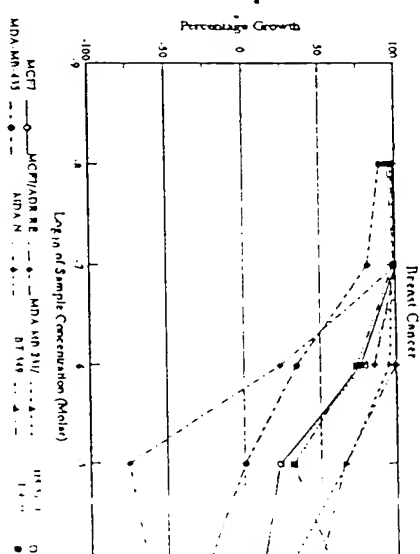
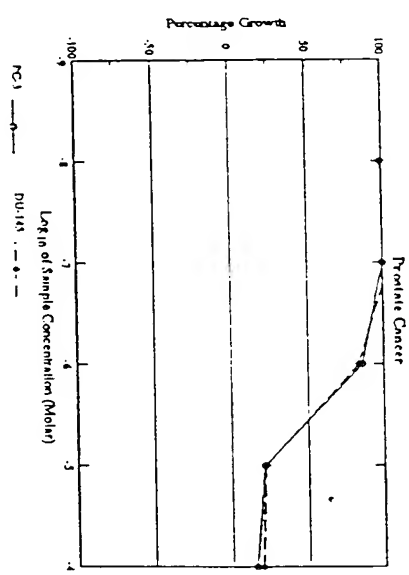
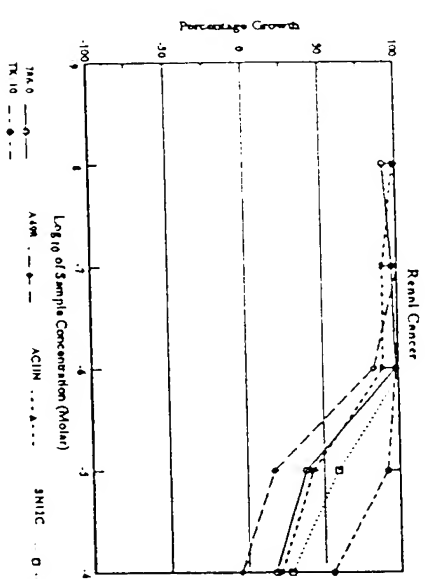
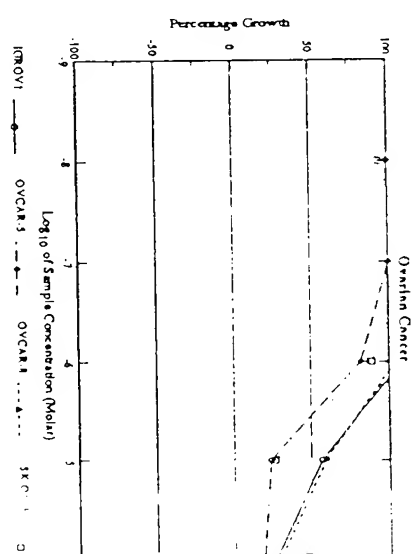
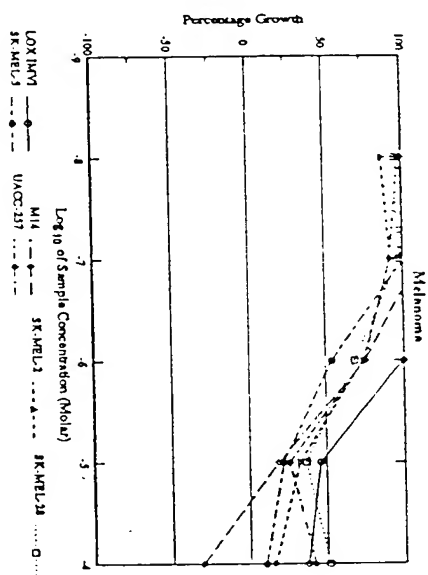
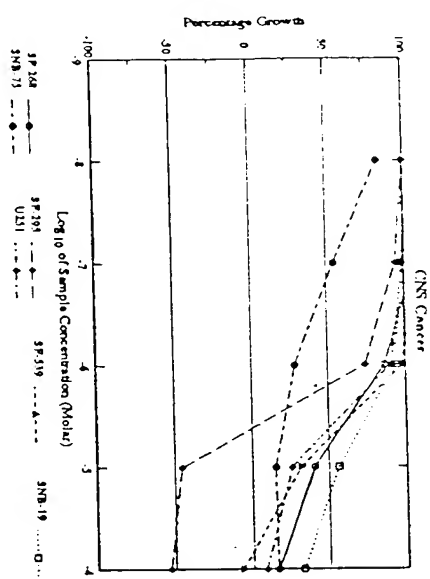
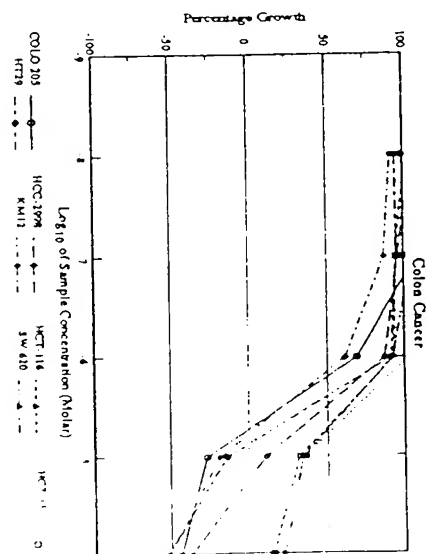
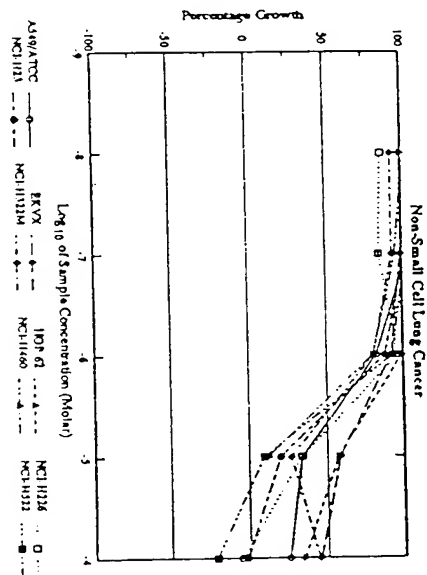
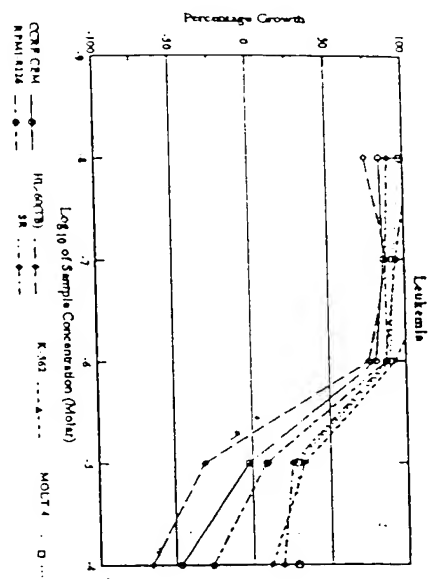


# National Cancer Institute Developmental Therapeutics Program

## In-Vitro Testing Results

C: D-673162-H/0-1/2	Experiment ID: 9409SC89	Test Type: 8	Units: Molar
Report Date: October 27, 1994	Test Date: September 26, 1994	QNS:	MC:
DMI: PHOMOPSIN A	Stain Reagent: Dual-Pass	SSPL: 0FLC	

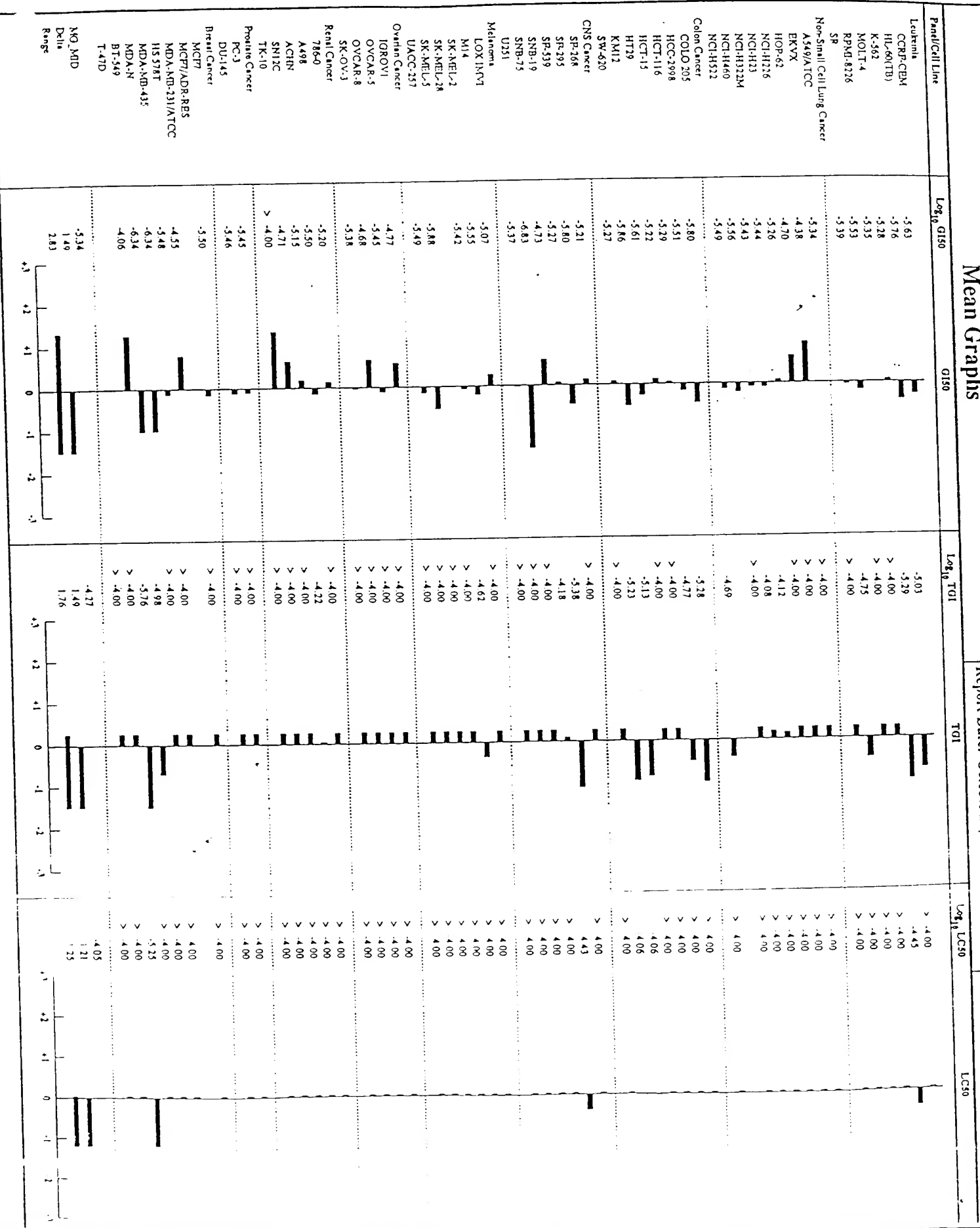
Panel/Cell Line	Time Zero	Ctrl	Log10 Concentration					Percent Growth					GI50	TGI	LC50
			Mean Optical Densities												
			-8.0	-7.0	-6.0	-5.0	-4.0	-6.0	-7.0	-8.0	-5.0	-4.0			
<b>Leukemia</b>															
CCRF-CEM	0.250	0.853	0.758	0.769	0.734	0.244	0.132	84	86	80	-2	-47	2.33E-06	9.40E-06	>1.00E-04
HL-60 (TB)	0.213	0.837	0.679	0.764	0.686	0.147	0.073	75	88	76	-31	-65	1.75E-06	5.13E-06	3.56E-05
K-562	0.129	0.952	0.989	1.125	0.897	0.403	0.223	105	121	93	33	11	5.27E-06	>1.00E-04	>1.00E-04
MOLT-4	0.281	1.269	1.249	1.197	1.169	0.560	0.560	96	93	90	26	26	4.44E-06	>1.00E-04	>1.00E-04
RPMI-8226	0.196	0.763	0.782	0.732	0.689	0.247	0.144	103	94	87	9	-27	2.97E-06	1.78E-05	>1.00E-04
SR	0.238	1.549	1.414	1.390	1.387	0.572	0.487	90	88	88	25	19	4.03E-06	>1.00E-04	>1.00E-04
<b>Ion-Small Cell Lung Cancer</b>															
A549/ATCC	0.361	1.606	1.696	1.649	1.386	0.782	0.678	107	103	82	34	25	4.62E-06	>1.00E-04	>1.00E-04
ERVX	0.688	1.638	1.701	1.629	1.562	1.239	1.117	107	99	92	56	45	4.20E-05	>1.00E-04	>1.00E-04
HOP-62	0.834	1.643	1.641	1.753	1.635	1.293	1.114	100	114	99	57	35	2.01E-05	>1.00E-04	>1.00E-04
NCI-H226	0.591	0.976	0.924	0.916	0.961	0.720	0.564	87	85	96	34	-5	5.46E-06	7.59E-05	>1.00E-04
NCI-H23	0.455	1.551	1.565	1.566	1.417	0.674	0.447	101	101	88	20	-2	3.60E-06	6.30E-05	>1.00E-04
NCI-H322M	0.556	1.332	1.277	1.278	1.178	0.765	0.899	93	93	80	27	44	3.69E-06	>1.00E-04	>1.00E-04
NCI-H460	0.219	1.089	1.100	1.049	0.913	0.324	0.235	101	95	80	12	.	2.75E-06	.	.
NCI-H522	0.434	1.047	1.062	1.062	1.004	0.492	0.343	102	102	93	9	-21	3.27E-06	2.04E-05	>1.00E-04
<b>Colon Cancer</b>															
COLO 205	0.206	0.993	0.985	1.055	0.750	0.152	0.116	99	108	69	-27	-44	1.58E-06	5.74E-06	>1.00E-04
HCC-2998	0.262	0.831	0.855	0.806	0.759	0.324	0.164	104	96	87	11	-37	3.09E-06	1.66E-05	>1.00E-04
HCT-116	0.230	1.467	1.507	1.415	1.405	0.631	0.417	102	94	93	32	15	5.08E-06	>1.00E-04	>1.00E-04
HCT-15	0.717	2.848	2.880	2.825	2.910	1.470	1.035	102	99	103	35	15	6.07E-06	>1.00E-04	>1.00E-04
HT29	0.148	0.784	0.753	0.754	0.730	0.126	0.071	95	95	92	-14	-52	2.48E-06	7.39E-06	8.68E-05
KML2	0.907	2.630	2.493	2.409	1.963	0.738	0.435	92	87	61	-19	-52	1.38E-06	5.85E-06	8.72E-05
SW-620	0.140	0.747	0.774	0.773	0.703	0.349	0.274	104	104	93	34	22	5.39E-06	>1.00E-04	>1.00E-04
<b>CNS Cancer</b>															
SF-266	0.367	1.090	1.120	1.132	0.994	0.660	0.486	104	106	87	40	16	6.20E-06	>1.00E-04	>1.00E-04
SF-295	0.554	1.306	1.303	1.263	1.111	0.302	0.258	100	94	74	-45	-53	1.59E-06	4.16E-06	3.70E-05
SF-539	0.517	1.546	1.539	1.568	1.526	0.844	0.481	99	102	98	32	-7	5.31E-06	6.61E-05	>1.00E-04
SNB-19	0.587	1.730	1.744	1.709	1.662	1.231	0.961	101	98	94	56	33	1.85E-05	>1.00E-04	>1.00E-04
SNB-75	0.367	0.848	0.767	0.629	0.502	0.440	0.444	63	55	28	15	16	1.49E-07	>1.00E-04	>1.00E-04
U251	0.191	0.840	0.862	0.830	0.781	0.357	0.247	103	98	91	26	9	4.23E-06	>1.00E-04	>1.00E-04
<b>Melanoma</b>															
LOX IMVI	0.279	1.166	1.180	1.243	1.164	0.689	0.611	101	106	100	46	37	8.46E-06	>1.00E-04	>1.00E-04
M14	0.250	0.620	0.617	0.657	0.530	0.320	0.172	99	110	76	19	-31	2.82E-06	2.38E-05	>1.00E-04
SK-MEL-2	0.563	1.464	1.350	1.395	1.232	0.855	0.709	67	92	74	32	16	3.80E-06	>1.00E-04	>1.00E-04
SK-MEL-28	0.305	0.627	0.804	0.816	0.664	0.496	0.573	96	96	69	37	51	.	>1.00E-04	>1.00E-04
SK-MEL-5	0.354	1.728	1.806	1.745	1.094	0.656	0.491	106	101	54	22	10	1.32E-06	>1.00E-04	>1.00E-04
UACC-257	0.709	1.849	1.826	1.759	1.565	1.004	1.189	98	92	75	26	42	3.23E-06	>1.00E-04	>1.00E-04
<b>Ovarian Cancer</b>															
IGROV1	0.346	1.442	1.490	1.646	1.535	0.968	0.646	104	119	109	57	27	1.70E-05	>1.00E-04	>1.00E-04
OVCAR-5	0.377	0.868	0.886	0.886	0.798	0.498	0.475	99	100	82	24	19	3.55E-06	>1.00E-04	>1.00E-04
OVCAR-8	0.550	2.445	2.538	3.068	2.519	1.674	1.121	105	133	104	59	30	2.09E-05	>1.00E-04	>1.00E-04
SK-OV-3	0.423	0.677	0.851	0.940	0.826	0.543	0.637	94	114	89	26	47	4.19E-06	>1.00E-04	>1.00E-04
<b>Renal Cancer</b>															
786-0	0.434	1.893	1.766	1.843	1.865	0.988	0.686	91	97	98	38	17	6.30E-06	>1.00E-04	>1.00E-04
A498	0.561	0.995	0.991	0.996	0.922	0.636	0.534	99	100	83	17	-5	3.19E-06	6.00E-05	>1.00E-04
ACHN	0.306	1.166	1.150	1.082	1.077	0.674	0.488	98	90	90	43	21	7.03E-06	>1.00E-04	>1.00E-04
SN12C	0.636	1.595	1.645	1.596	1.627	1.204	0.903	105	100	103	59	28	1.97E-05	>1.00E-04	>1.00E-04
TK-10	0.399	1.046	1.049	1.085	1.037	0.996	0.757	100	106	98	92	55	>1.00E-04	>1.00E-04	>1.00E-04
<b>Prostate Cancer</b>															
PC-3	0.952	3.382	3.359	3.378	3.041	1.463	1.322	99	100	86	21	15	3.58E-06	>1.00E-04	>1.00E-04
DG-145	0.459	1.630	1.615	1.686	1.434	0.711	0.688	99	105	63	22	20	3.46E-06	>1.00E-04	>1.00E-04
<b>Breast Cancer</b>															
MCF7	0.259	1.241	1.224	1.244	1.009	0.486	0.379	98	100	76	23	12	3.13E-06	>1.00E-04	>1.00E-04
MCF7/ADR-RES	0.517	1.492	1.460	1.497	1.351	0.831	0.446	97	100	86	.	.	.	.	.
MDA-MB-231 ATCC	0.614	1.666	1.673	1.667	1.636	1.222	0.874	90	98	96	66	30	2.84E-05	>1.00E-04	>1.00E-04
HS 578T	0.586	1.199	1.278	1.255	1.072	0.729	0.612	113	109	79	23	4	3.33E-06	>1.00E-04	>1.00E-04
MDA-MB-435	0.283	1.264	1.166	1.079	0.616	0.288	0.218	90	81	34	1	-23	4.57E-07	1.05E-05	>1.00E-04
MDA-N	0.332	1.412	1.441	1.423	0.583	0.084	0.124	103	101	23	-75	-63	4.53E-07	1.73E-06	5.58E-06
BT-549	0.606	1.721	1.744	1.726	1.696	1.295	1.031	107	110	100	74	40	8.77E-06	>1.00E-04	>1.00E-04
T-47D	0.770	2.347	2.272	2.223	1.991	1.291	1.000	107	110	100	74	40	8.77E-06	>1.00E-04	>1.00E-04



# Mean Graphs

Report Date: October 27, 1994

Test Date: September 20, 1994



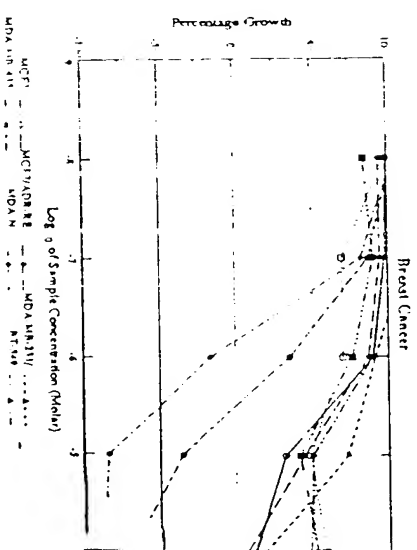
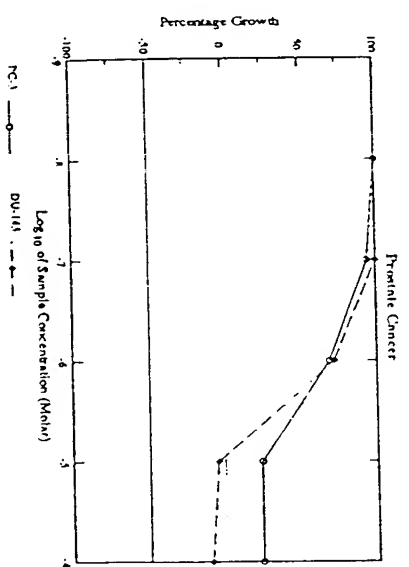
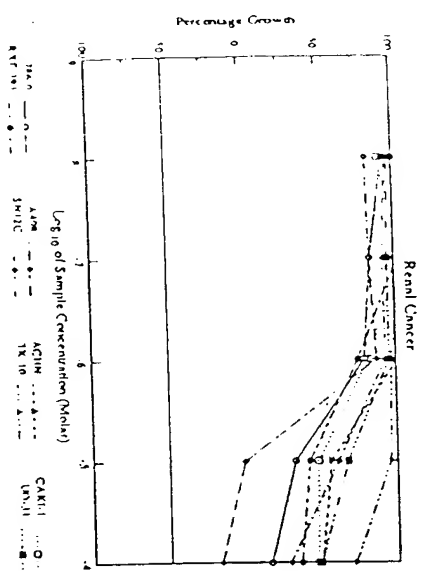
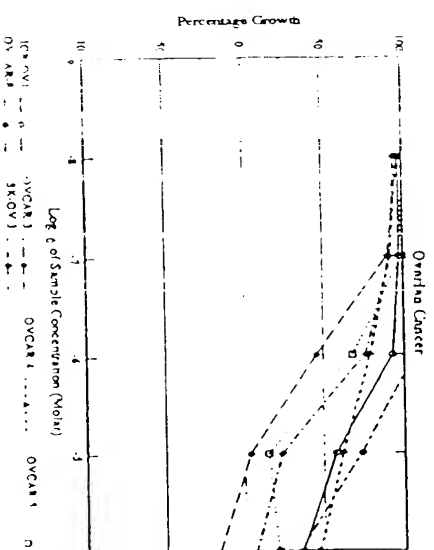
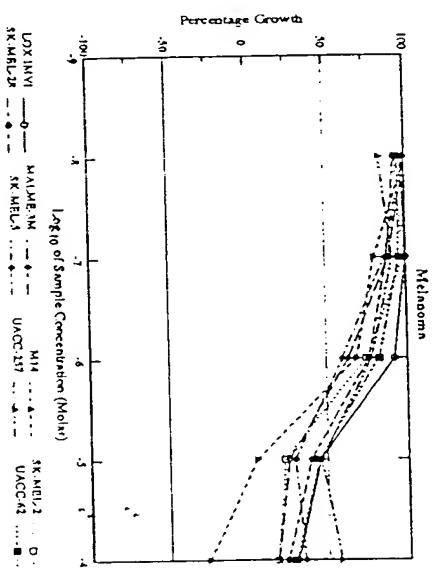
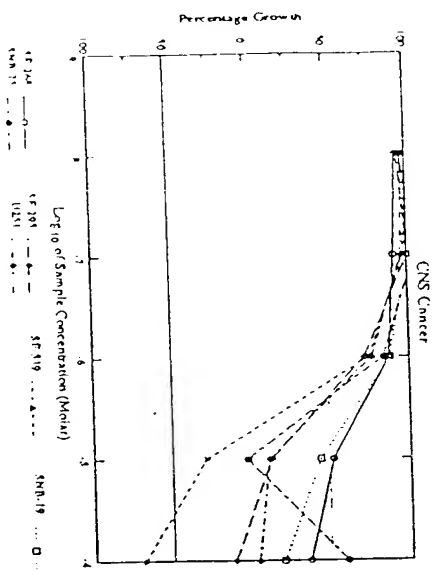
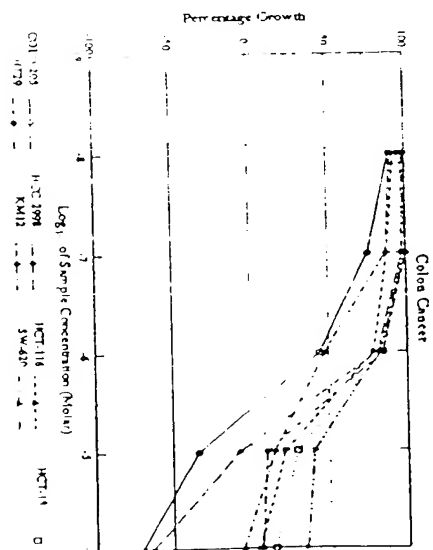
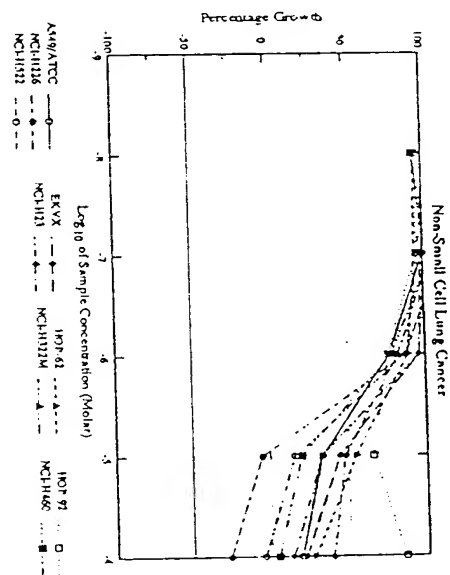
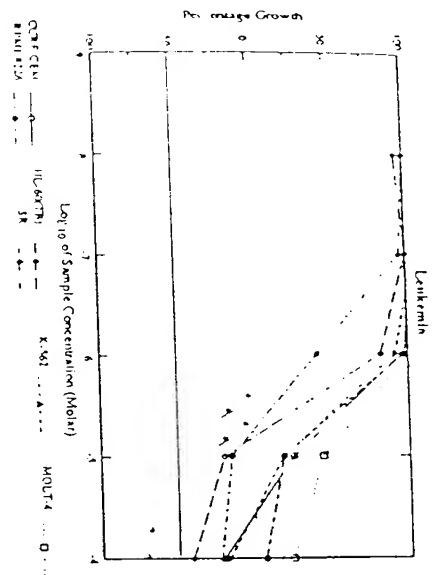
# National Cancer Institute Developmental Therapeutics Program

## In-Vitro Testing Results

Contract #: J73164-J/0-2/11	Experiment ID: 9502RM16	Test Type: 8	Units: Molar
Report Date: March 28, 1995	Test Date: February 13, 1995	QNS: SHP	MC:
DMI: Iso-phomopsin A	Stain Reagent: Dual-Pass	SSPL: OFLC	

Panel/Cell Line	Time Zero	Ctrl	Mean Optical Densities					Percent Growth					GI50	TGI	LC50
			-8.0	-7.0	-6.0	-5.0	-4.0	-8.0	-7.0	-6.0	-5.0	-4.0			
<b>Leukemia</b>															
CCRF-CEM	0.634	1.762	1.792	1.625	1.730	0.920	0.502	103	106	97	25	-21	4.54E-06	3.55E-05	>1.00E-04
HL-60 (TB)	0.592	1.622	1.571	1.622	1.447	0.477	0.351	95	100	83	-19	-41	2.10E-06	6.46E-06	>1.00E-04
K-562	0.362	1.370	1.372	1.411	1.295	0.567	0.317	100	104	92	19	-17	3.76E-06	3.34E-05	>1.00E-04
MOLT-4	0.686	1.845	1.670	1.647	1.662	1.201	0.965	102	100	101	44	24	7.96E-06	>1.00E-04	>1.00E-04
RPMI-6226	0.735	1.589	1.671	1.673	1.567	0.696	0.788	110	110	97	19	6	4.02E-06	>1.00E-04	>1.00E-04
SR	0.466	1.032	1.031	1.013	0.711	0.414	0.377	100	96	41	-15	-22	6.95E-07	5.44E-06	>1.00E-04
<b>Non-Small Cell Lung Cancer</b>															
A549/ATCC	0.377	1.339	1.374	1.336	1.120	0.692	0.556	104	100	77	33	19	4.11E-06	>1.00E-04	>1.00E-04
ECVX	0.402	1.025	0.990	1.034	1.006	0.677	0.536	94	101	96	44	22	7.61E-06	>1.00E-04	>1.00E-04
HOP-62	0.391	0.893	0.864	0.863	0.839	0.664	0.529	94	94	89	54	26	1.46E-05	>1.00E-04	>1.00E-04
HOP-92	0.761	1.116	1.101	1.101	1.031	0.895	1.066	96	96	76	66	66	>1.00E-04	>1.00E-04	>1.00E-04
NCI-H226	0.607	0.864	0.900	0.890	0.834	0.573	0.446	114	110	88	-6	-27	2.55E-06	6.73E-06	>1.00E-04
NCI-H23	0.419	1.166	1.196	1.202	1.036	0.774	0.709	104	105	83	48	39	6.51E-06	>1.00E-04	>1.00E-04
NCI-H322H	0.624	1.566	1.627	1.551	1.525	0.926	0.752	106	96	96	32	14	5.26E-06	>1.00E-04	>1.00E-04
NCI-H460	0.161	1.263	1.192	1.314	1.035	0.393	0.228	93	105	79	20	4	3.07E-06	>1.00E-04	>1.00E-04
NCI-H522	0.413	1.073	1.081	1.050	0.992	0.514	0.395	101	97	86	15	-4	3.32E-06	6.00E-05	>1.00E-04
<b>Colon Cancer</b>															
COLO 205	0.326	1.333	1.236	1.089	0.770	0.217	0.097	90	76	44	-34	-70	6.44E-07	3.66E-06	2.75E-05
HCC-2998	0.590	1.266	1.252	1.246	1.142	0.545	0.214	98	97	62	-6	-64	2.26E-06	6.23E-06	5.68E-05
HCT-116	0.161	1.304	1.227	1.169	1.061	0.406	0.211	93	88	79	21	4	3.17E-06	>1.00E-04	>1.00E-04
HCT-15	0.317	1.667	1.626	1.637	1.464	0.711	0.512	97	98	85	29	14	4.23E-06	>1.00E-04	>1.00E-04
HT29	0.166	0.831	0.824	0.826	0.753	0.233	0.207	99	100	85	10	6	2.94E-06	>1.00E-04	>1.00E-04
KM12	0.294	1.445	1.343	1.296	0.836	0.464	0.277	91	67	47	15	-6	6.55E-07	5.23E-05	>1.00E-04
SW-620	0.156	0.891	0.870	0.867	0.766	0.450	0.410	97	99	83	40	35	5.65E-06	>1.00E-04	>1.00E-04
<b>CNS Cancer</b>															
SF-266	0.463	1.431	1.373	1.352	1.314	0.966	0.617	94	92	86	52	37	1.36E-05	>1.00E-04	>1.00E-04
SF-295	0.400	1.038	1.007	1.039	0.864	0.479	0.356	95	100	73	12	-11	2.36E-06	3.37E-05	>1.00E-04
SF-539	0.367	0.860	0.867	0.846	0.745	0.275	0.123	101	97	76	-29	-66	1.76E-06	5.26E-06	3.41E-05
SNB-19	0.571	1.365	1.360	1.362	1.292	0.930	0.733	97	100	69	44	20	7.37E-06	>1.00E-04	>1.00E-04
SNB-75	0.361	0.626	0.619	0.636	0.566	0.370	0.529	97	104	64	-3	60	.	.	>1.00E-04
U251	0.199	0.893	0.876	0.867	0.736	0.276	0.226	96	96	77	11	4	2.56E-06	>1.00E-04	>1.00E-04
<b>Melanoma</b>															
LOX IMVI	0.191	0.962	0.963	0.980	0.921	0.551	0.430	96	100	92	45	30	6.01E-06	>1.00E-04	>1.00E-04
MALME-3M	0.464	1.037	1.039	0.976	0.831	0.611	0.563	100	89	64	26	17	2.31E-06	>1.00E-04	>1.00E-04
M14	0.196	0.569	0.571	0.496	0.453	0.215	0.146	101	60	69	5	-26	1.96E-06	1.45E-05	>1.00E-04
SK-MEL-2	0.746	1.368	1.331	1.360	1.212	0.867	0.653	94	99	75	23	17	3.01E-06	>1.00E-04	>1.00E-04
SK-MEL-28	0.576	1.166	1.146	1.114	1.043	0.617	0.721	93	66	77	40	24	5.72E-06	>1.00E-04	>1.00E-04
SK-MEL-5	0.034	1.014	1.006	0.885	0.622	0.320	0.375	99	87	60	29	35	2.11E-06	>1.00E-04	>1.00E-04
UACC-257	0.536	1.297	1.175	1.234	1.133	0.685	0.977	64	92	76	46	56	.	>1.00E-04	>1.00E-04
UACC-62	0.577	1.862	1.806	1.610	1.639	1.150	0.946	96	96	83	45	29	7.21E-06	>1.00E-04	>1.00E-04
<b>Ovarian Cancer</b>															
IGR-OV1	0.515	1.689	1.661	1.656	1.605	1.192	0.937	96	97	93	56	36	2.26E-05	>1.00E-04	>1.00E-04
OVCAR-3	0.293	0.905	0.886	0.846	0.572	0.314	0.244	97	90	46	3	-17	7.57E-07	1.47E-05	>1.00E-04
OVCAR-4	0.467	1.176	1.151	1.121	1.026	0.906	0.796	97	92	79	62	47	6.05E-05	>1.00E-04	>1.00E-04
OVCAR-5	0.393	0.867	0.872	0.684	0.730	0.467	0.495	97	99	66	15	21	2.20E-06	>1.00E-04	>1.00E-04
OVCAR-6	0.267	1.196	1.256	1.255	1.252	0.950	0.563	106	106	106	74	34	3.93E-05	>1.00E-04	>1.00E-04
SK-OV-3	0.466	1.011	0.962	0.966	0.662	0.595	0.503	95	92	76	23	6	3.13E-06	>1.00E-04	>1.00E-04
<b>Renal Cancer</b>															
766-0	0.200	0.949	0.901	0.829	0.794	0.442	0.317	94	64	79	32	16	4.19E-06	>1.00E-04	>1.00E-04
A496	1.061	1.413	1.354	1.359	1.371	1.079	0.903	62	84	67	0	-16	2.67E-06	9.94E-06	>1.00E-04
ACHN	0.406	1.460	1.471	1.547	1.470	0.993	0.917	101	106	101	56	46	6.11E-05	>1.00E-04	>1.00E-04
CAKI-1	0.466	0.950	0.904	0.971	0.862	0.695	0.690	90	104	82	47	46	6.32E-06	>1.00E-04	>1.00E-04
RXF-393	0.704	1.562	1.562	1.603	1.361	1.070	1.013	100	102	75	42	35	5.59E-06	>1.00E-04	>1.00E-04
SN12C	0.371	1.335	1.291	1.265	1.270	0.955	0.640	95	93	93	61	26	2.11E-05	>1.00E-04	>1.00E-04
TK-10	0.627	1.091	1.094	1.113	1.076	1.071	0.956	101	105	97	96	71	>1.00E-04	>1.00E-04	>1.00E-04
UO-31	0.593	1.476	1.452	1.440	1.439	1.166	1.016	97	96	96	67	46	7.61E-05	>1.00E-04	>1.00E-04
<b>Prostate Cancer</b>															
PC-3	0.302	1.164	1.161	1.115	0.892	0.504	0.503	100	94	66	23	23	2.56E-06	>1.00E-04	>1.00E-04
DU-145	0.339	1.029	1.077	1.026	0.652	0.324	0.306	107	100	72	-5	-9	1.92E-06	6.71E-06	>1.00E-04
<b>Breast Cancer</b>															
MCF7	0.423	1.139	1.131	1.123	1.068	0.649	0.509	99	98	90	32	12	4.84E-06	>1.00E-04	>1.00E-04
MCF7/ADR-RES	0.330	1.037	0.996	1.001	0.944	0.640	0.376	94	95	87	44	7	7.19E-06	>1.00E-04	>1.00E-04
MDA-ME-231/ATCC	0.408	0.926	0.915	0.963	0.866	0.786	0.502	97	110	92	73	26	2.60E-05	>1.00E-04	>1.00E-04
HS 578T	0.666	1.396	1.391	1.236	1.236	1.119	1.174	99	70	70	46	56	.	>1.00E-04	>1.00E-04
MDA-MB-435	0.320	1.266	1.314	1.164	0.653	0.206	0.099	103	67	34	-35	-69	5.06E-07	3.13E-06	2.76E-05
MDA-N	0.214	0.746	0.764	0.654	0.179	0.035	0.026	103	82	-16	-64	-66	2.13E-07	6.83E-07	3.16E-06
BT-549	0.476	0.606	0.615	0.600	0.774	0.640	0.634	102	98	90	50	16	5.72E-06	>1.00E-04	>1.00E-04
T-47D	0.711	2.153	1.927	2.015	1.610	1.303	1.466	64	90	76	41	52	.	>1.00E-04	>1.00E-04





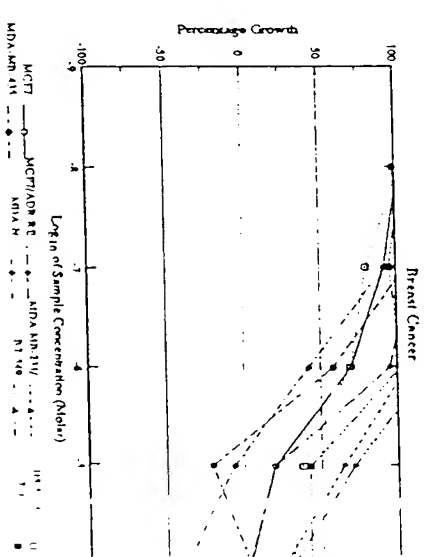
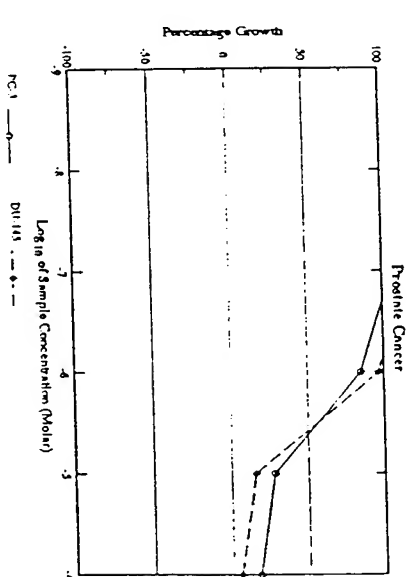
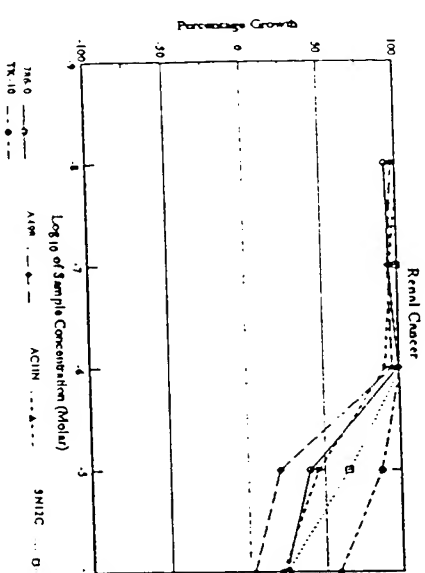
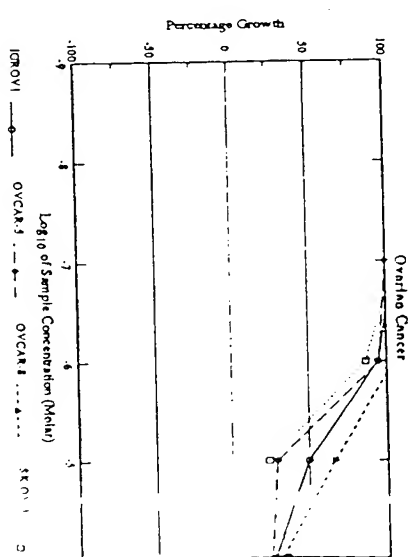
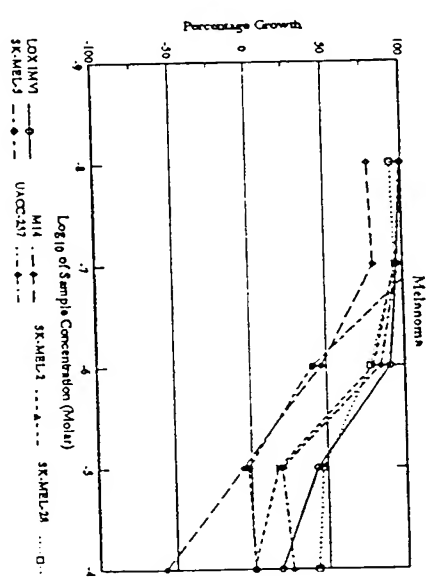
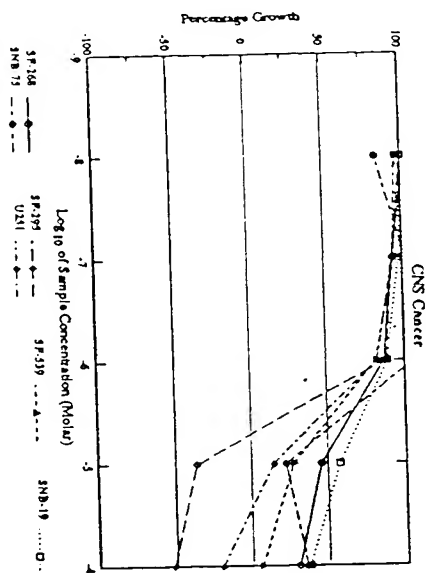
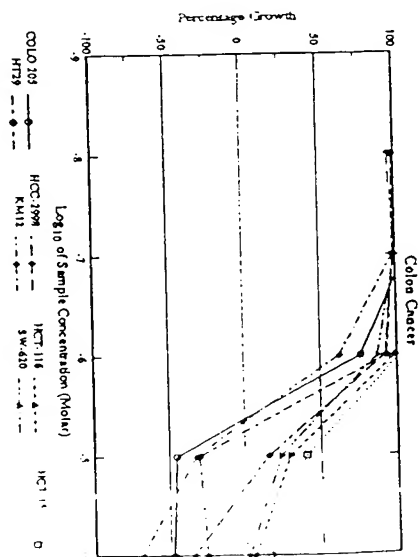
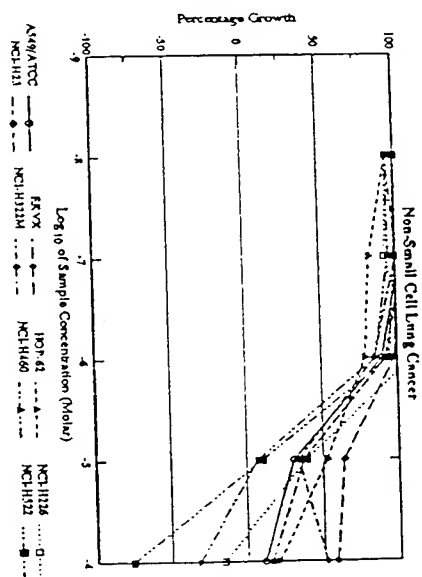
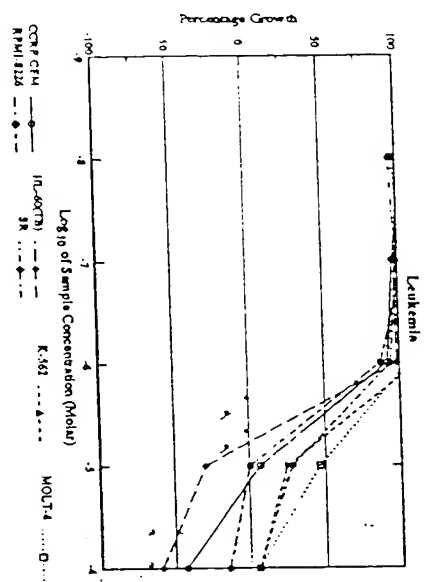
Facility, all Lines	Log <sub>10</sub> (CS10)	Log <sub>10</sub> (TC1)	Log <sub>10</sub> (CS10)	Log <sub>10</sub> (CS10)
<b>Leakdown</b>				
CCRT (1.1)	5.74	-4.45	> -4.00	> -4.00
ML/N/T/D	-5.64	-5.19	> -4.00	> -4.00
K (W)	-5.42	-4.44	> -4.00	> -4.00
Amplitude	5.10	> -4.00	> -4.00	> -4.00
Practical	5.40	> -4.00	> -4.00	> -4.00
SP	6.16	-5.26	> -4.00	> -4.00
<b>Non-Sensitive</b>				
ASD/A/PTC	-5.70	> -4.00	> -4.00	> -4.00
EXV	-5.12	> -4.00	> -4.00	> -4.00
HOB/62	-4.84	> -4.00	> -4.00	> -4.00
HOB/92	> -4.00	> -4.00	> -4.00	> -4.00
NCI H224	-5.70	-5.05	> -4.00	> -4.00
NCI H225	-5.07	> -4.00	> -4.00	> -4.00
NCI H225M	-5.24	> -4.00	> -4.00	> -4.00
NCI H240	-5.51	> -4.00	> -4.00	> -4.00
NCI H222	-5.44	-4.22	> -4.00	> -4.00
<b>Green Cover</b>				
COLO 304	-6.10	-5.44	-4.56	-4.35
HCC 2973	-5.65	-5.04	-4.25	-4.00
HCC 116	-5.50	> -4.00	> -4.00	> -4.00
HCC 15	-5.77	> -4.00	> -4.00	> -4.00
HCC 79	-5.51	> -4.00	> -4.00	> -4.00
KAL12	-6.07	-4.28	> -4.00	> -4.00
SW420	-5.21	> -4.00	> -4.00	> -4.00
<b>Green Cover</b>				
SI 264	-4.86	> -4.00	> -4.00	> -4.00
SE 295	-5.62	-4.47	> -4.00	> -4.00
SE 519	-5.15	-5.24	> -4.00	> -4.00
SWR 19	-5.15	> -4.00	> -4.00	> -4.00
SWR 15	-5.39	> -4.00	> -4.00	> -4.00
<b>Shadows</b>				
LOX INVAL	-5.10	> -4.00	> -4.00	> -4.00
MAJLME IN	-5.64	> -4.00	> -4.00	> -4.00
NIE	-5.70	-4.84	> -4.00	> -4.00
SK NIE 2	-5.52	> -4.00	> -4.00	> -4.00
SK MEL 24	-5.74	> -4.00	> -4.00	> -4.00
SK NIE 5	-5.64	> -4.00	> -4.00	> -4.00
UACC 20	-5.14	> -4.00	> -4.00	> -4.00
UACC 62	-5.14	> -4.00	> -4.00	> -4.00
<b>Green Cover</b>				
OVCA 1	-4.65	> -4.00	> -4.00	> -4.00
OVCA 4	-4.22	-4.81	> -4.00	> -4.00
OVCA 8	-5.06	> -4.00	> -4.00	> -4.00
OVCA 8	-4.41	> -4.00	> -4.00	> -4.00
SK OV 3	-5.50	> -4.00	> -4.00	> -4.00
<b>Brake Cover</b>				
1460	-5.74	> -4.00	> -4.00	> -4.00
A09	-5.57	-5.01	> -4.00	> -4.00
ACTIV	-4.21	> -4.00	> -4.00	> -4.00
CAK 1	-5.04	> -4.00	> -4.00	> -4.00
REF 101	-5.22	> -4.00	> -4.00	> -4.00
SW 12	-4.64	> -4.00	> -4.00	> -4.00
TX 10	> -4.00	> -4.00	> -4.00	> -4.00
TX 11	-4.11	> -4.00	> -4.00	> -4.00
<b>Green Cover</b>				
PT 1	-5.59	> -4.00	> -4.00	> -4.00
DT 145	-5.72	-5.06	> -4.00	> -4.00
<b>Green Cover</b>				
ACTIV	-5.72	> -4.00	> -4.00	> -4.00
ACTIV	-5.14	> -4.00	> -4.00	> -4.00
ACTIV	-4.50	> -4.00	> -4.00	> -4.00
ACTIV	-4.70	> -4.00	> -4.00	> -4.00
ACTIV	-4.70	> -4.00	> -4.00	> -4.00
ACTIV	-4.70	> -4.00	> -4.00	>

# National Cancer Institute Developmental Therapeutics Program

## In-Vitro Testing Results

D: J164-J/0-1/4	Experiment ID: 9409SC89	Test Type: 8	Units: Molar
Start Date: October 27, 1994	Test Date: September 26, 1994	QNS:	MC:
II: ISO-PHOMOPSIN A	Stain Reagent: Dual-Pass	SSPL: 0FLC	

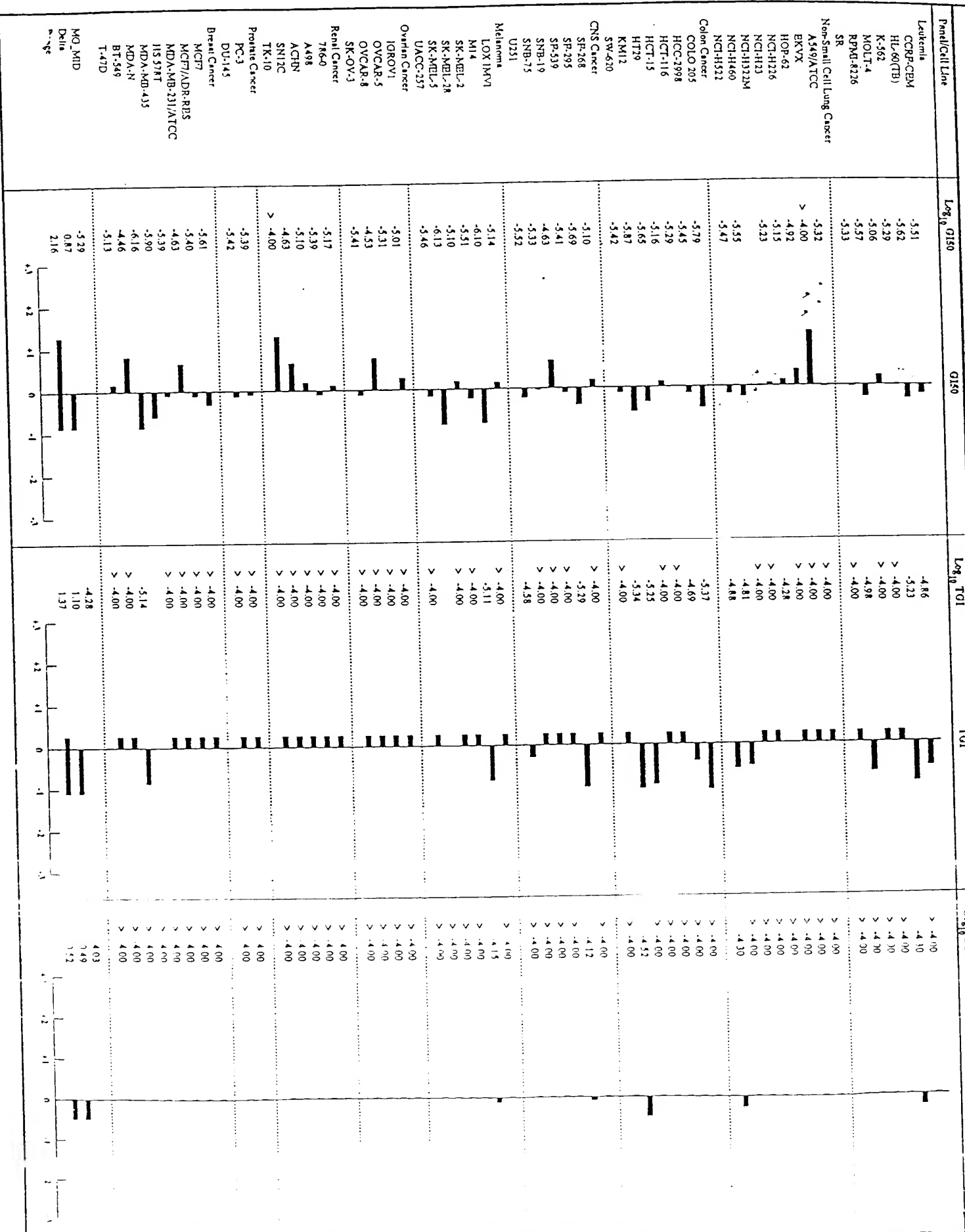
Cell Line	Time		Log10 Concentration					Percent Growth				GI50	TGI	LC50
	Zero	Ctrl	-8.0	-7.0	-6.0	-5.0	-4.0	-6.0	-7.0	-8.0	-9.0			
Cell Line														
Kemmo	0.250	0.846	0.867	0.826	0.799	0.292	0.143	103	97	92	7	3.12E-06	1.36E-05	>1.00E-04
CCRF-CEM	0.213	0.710	0.741	0.700	0.701	0.150	0.088	106	98	98	-29	2.39E-06	5.69E-06	4.99E-05
HL-60(TB)	0.129	0.726	0.896	0.866	0.799	0.279	0.156	126	123	112	25	5.16E-06	>1.00E-04	>1.00E-04
K-562	0.261	1.162	1.135	1.210	1.215	0.689	0.327	97	105	106	46	6.66E-06	>1.00E-04	>1.00E-04
MOLT-4	0.196	0.784	0.822	0.809	0.710	0.196	0.166	106	104	87	0	2.69E-06	1.04E-05	>1.00E-04
RPMT-8226	0.238	1.562	1.504	1.544	1.488	0.609	0.307	96	99	94	26	4.67E-06	>1.00E-04	>1.00E-04
SR														
Small Cell Lung Cancer														
AS49/ATCC	0.361	1.402	1.444	1.430	1.301	0.683	0.476	104	105	90	31	4.76E-06	>1.00E-04	>1.00E-04
EKVX	0.668	1.701	1.726	1.712	1.663	1.334	1.279	103	101	98	64	>1.00E-04	>1.00E-04	>1.00E-04
HOP-62	0.834	1.738	1.696	1.579	1.546	1.310	1.022	95	62	79	53	1.21E-05	>1.00E-04	>1.00E-04
NCI-H226	0.591	0.929	0.913	0.906	0.963	0.724	0.500	95	93	110	39	7.04E-06	5.22E-05	>1.00E-04
NCI-H23	0.455	1.575	1.566	1.630	1.493	0.875	0.636	99	105	93	37	5.93E-06	>1.00E-04	>1.00E-04
NCI-H322M	0.556	1.391	1.351	1.395	1.267	0.840	0.986	95	100	85	34	>1.00E-04	>1.00E-04	>1.00E-04
NCI-H460	0.219	1.062	1.023	1.025	0.940	0.281	0.150	95	96	85	7	2.84E-06	1.54E-05	>1.00E-04
NCI-H522	0.434	1.065	1.065	1.059	1.034	0.500	0.104	100	99	95	10	3.40E-06	1.32E-05	5.00E-05
Ion Cancer														
COLO 205	0.208	0.975	0.991	1.024	0.792	0.114	0.109	102	106	76	-45	1.64E-06	4.24E-06	>1.00E-04
HCC-2998	0.262	0.673	0.848	0.866	0.826	0.356	0.171	96	99	92	15	3.55E-06	2.03E-05	>1.00E-04
HCT-116	0.230	1.417	1.419	1.549	1.405	0.583	0.300	100	111	99	30	5.09E-06	>1.00E-04	>1.00E-04
HCT-15	0.717	2.847	2.851	2.880	2.893	1.573	1.050	100	102	102	40	6.95E-06	>1.00E-04	>1.00E-04
HT29	0.146	0.617	0.806	0.804	0.774	0.103	0.110	98	98	93	-30	2.24E-06	5.68E-06	>1.00E-04
IMR22	0.907	1.983	2.156	1.962	1.577	0.611	0.283	116	98	62	-33	1.35E-06	4.53E-06	3.02E-05
SW-620	0.140	0.690	0.683	0.667	0.618	0.269	0.149	99	99	87	23	3.82E-06	>1.00E-04	>1.00E-04
S Cancer														
ST-268	0.367	1.294	1.313	1.235	1.173	0.792	0.651	102	94	87	46	7.91E-06	>1.00E-04	>1.00E-04
ST-295	0.554	1.239	1.239	1.193	1.158	0.354	0.267	100	93	88	-36	2.03E-06	5.12E-06	7.57E-05
ST-539	0.517	1.466	1.449	1.435	1.309	0.789	0.576	96	95	62	26	3.91E-06	>1.00E-04	>1.00E-04
SNB-19	0.567	1.709	1.709	1.684	1.590	1.230	1.007	100	98	89	57	2.34E-05	>1.00E-04	>1.00E-04
SNB-75	0.367	0.601	0.730	0.810	0.827	0.466	0.523	84	102	106	23	4.72E-06	>1.00E-04	>1.00E-04
U251	0.191	0.674	0.852	0.829	0.755	0.293	0.152	97	93	63	15	3.03E-06	2.65E-05	>1.00E-04
Lanoma														
LOX IMVI	0.279	1.142	1.136	1.108	1.061	0.653	0.444	99	96	91	43	7.22E-06	>1.00E-04	>1.00E-04
M14	0.250	0.509	0.457	0.458	0.370	0.235	0.106	76	61	46	-6	7.86E-07	7.74E-06	7.13E-05
SK-MEL-2	0.563	1.347	1.349	1.305	1.191	0.705	0.566	100	95	80	16	3.06E-06	>1.00E-04	>1.00E-04
SK-MEL-26	0.305	0.940	0.894	0.906	0.800	0.602	0.577	93	95	78	47	7.89E-06	>1.00E-04	>1.00E-04
SK-MEL-5	0.354	1.476	1.666	1.591	0.613	0.347	0.370	117	110	41	-2	7.37E-07	.	>1.00E-04
UACC-257	0.709	1.939	1.918	1.889	1.751	0.960	1.035	98	96	85	20	3.46E-06	>1.00E-04	>1.00E-04
Ovarian Cancer														
IGROV1	0.346	1.494	1.546	1.561	1.429	0.914	0.660	105	106	94	49	9.72E-06	>1.00E-04	>1.00E-04
OVCAR-5	0.377	0.957	0.970	0.954	0.928	0.548	0.523	102	100	95	30	4.87E-06	>1.00E-04	>1.00E-04
OVCAR-8	0.550	2.624	2.695	2.769	2.718	1.919	1.214	103	107	105	66	2.95E-05	>1.00E-04	>1.00E-04
SK-OV-3	0.423	0.662	0.882	0.866	0.802	0.530	0.576	105	106	86	24	3.86E-06	>1.00E-04	>1.00E-04
Anal Cancer														
786-0	0.434	1.823	1.726	1.743	1.813	0.992	0.760	93	94	99	40	6.82E-06	>1.00E-04	>1.00E-04
A498	0.561	0.917	0.906	0.893	0.901	0.634	0.572	97	93	95	21	4.04E-06	>1.00E-04	>1.00E-04
ACHN	0.306	1.169	1.181	1.125	1.087	0.701	0.467	101	95	91	46	8.02E-06	>1.00E-04	>1.00E-04
SN12C	0.636	1.662	1.667	1.655	1.676	1.306	0.864	102	99	101	65	2.36E-05	>1.00E-04	>1.00E-04
TK-10	0.399	1.066	1.072	1.090	1.072	0.961	0.789	101	103	101	67	>1.00E-04	>1.00E-04	>1.00E-04
Prostate Cancer														
PC-3	0.952	3.351	3.364	3.496	2.967	1.625	1.382	101	106	85	28	4.11E-06	>1.00E-04	>1.00E-04
DO-145	0.459	1.560	1.627	1.676	1.526	0.630	0.516	106	111	97	16	3.77E-06	>1.00E-04	>1.00E-04
Breast Cancer														
MCF7	0.259	1.162	1.204	1.109	0.900	0.442	0.291	102	92	69	20	2.46E-06	>1.00E-04	>1.00E-04
MCF7/ADR-RES	0.517	1.302	1.347	1.375	1.266	0.670	0.535	106	109	95	19	3.96E-06	>1.00E-04	>1.00E-04
MDA-MB-231/ATCC	0.614	1.660	1.680	1.663	1.733	1.286	0.884	102	100	107	64	2.35E-05	>1.00E-04	>1.00E-04
HS 578T	0.566	1.116	1.132	1.009	0.951	0.786	0.750	103	60	69	36	4.03E-06	>1.00E-04	>1.00E-04
MDA-MB-435	0.283	1.202	1.185	1.255	0.813	0.226	0.307	98	106	58	-20	1.25E-06	.	>1.00E-04
MDA-N	0.332	1.546	1.562	1.449	0.841	0.310	0.209	103	92	42	-7	6.90E-07	7.30E-06	>1.00E-04
BT-549	0.606	1.199	1.295	1.247	1.333	1.026	0.794	116	108	123	71	3.44E-05	>1.00E-04	>1.00E-04
T-47D	0.775	2.137	2.196	2.079	2.174	1.353	1.352	104	96	103	42	7.46E-06	>1.00E-04	>1.00E-04



# Mean Graphs

Report Date: October 27, 1994

Test Date: September 20, 1994

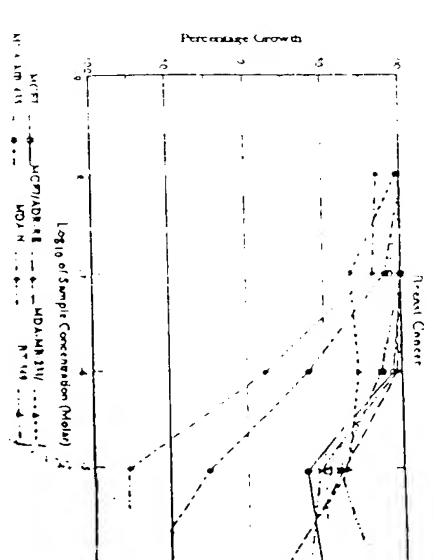
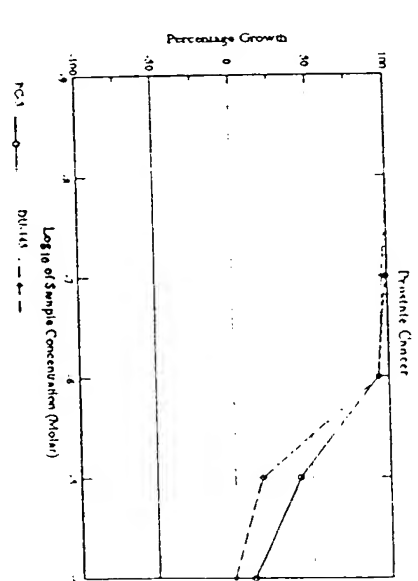
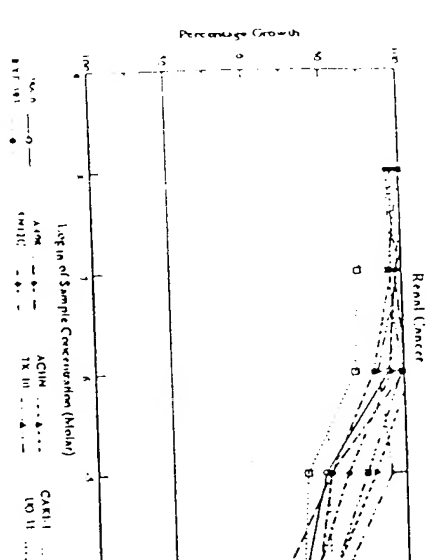
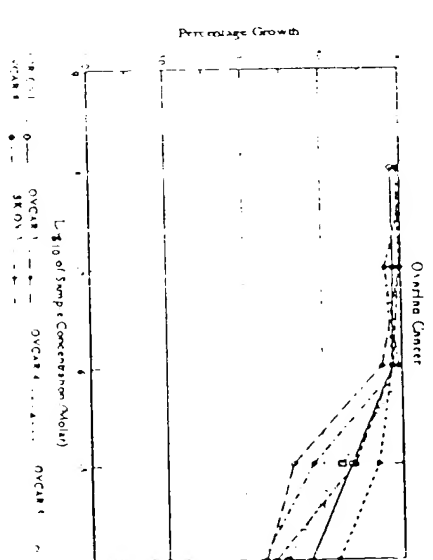
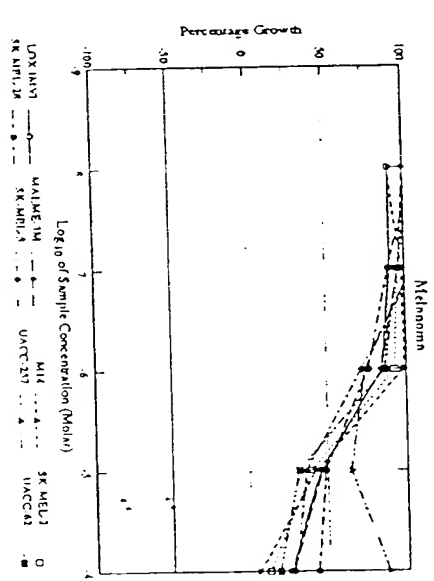
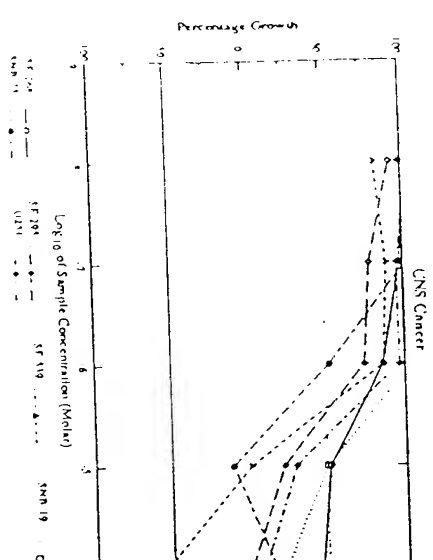
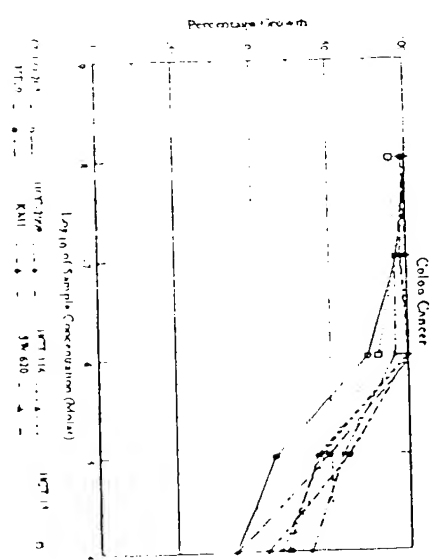
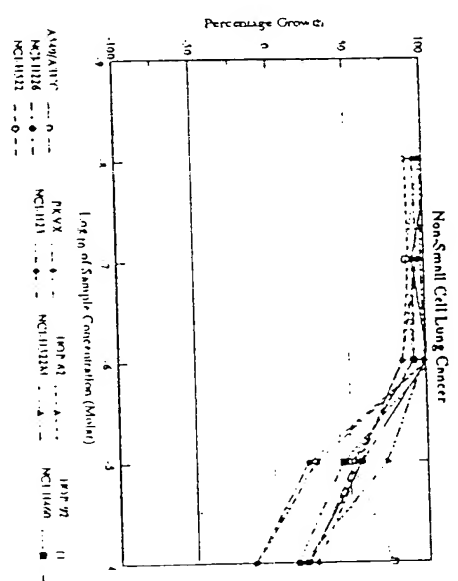
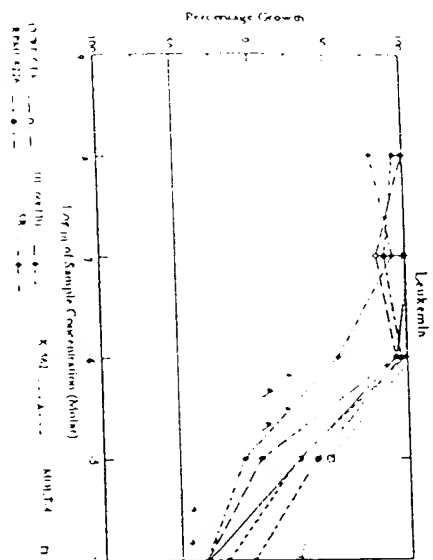


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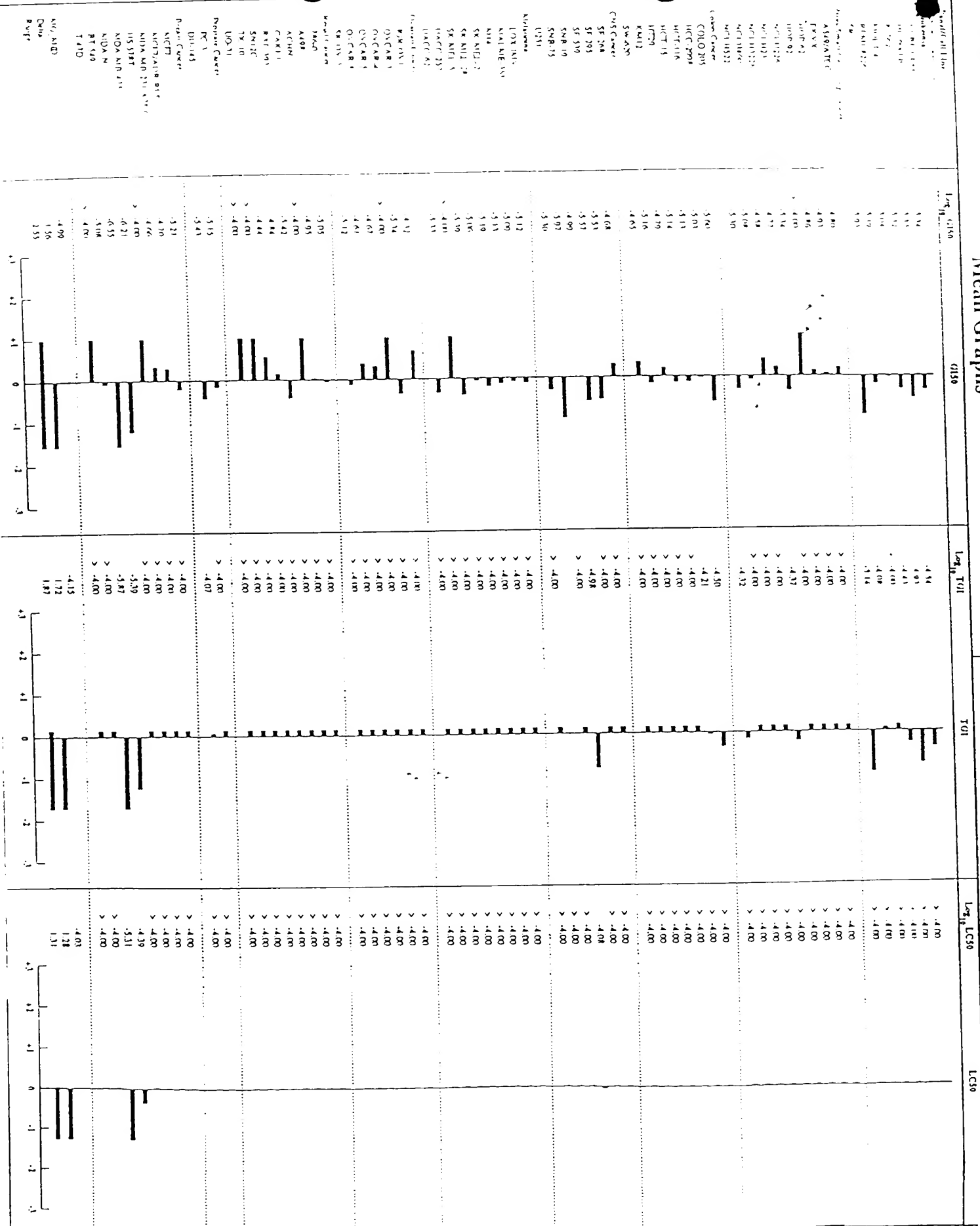
## In-Vitro Testing Results

NCI: 673163 -I/O-2/10	Experiment ID: 9502RM16	Test Type: 8	Units: Molar
Report Date: March 28, 1995	Test Date: February 13, 1995	QNS: SHP	MC:
DMI: Octahydrophomopsin A	Stain Reagent: Dual-Pass	SSPL: 0FLC	

Panel/Cell Line	Time Zero	Ctrl	Log10 Concentration					Percent Growth					GI50	TD50	TD100	
			-6.0	-7.0	-8.0	-9.0	-10.0	-6.0	-7.0	-8.0	-9.0	-10.0				
Leukemia																
CCRF-CEM	0.634	1.663	1.656	1.663	1.595	0.922	0.423	99	102	93	26	-13	4.61E-06	1.1E-05	>1.00E-04	
HL-60 (TB)	0.597	1.636	1.633	1.440	1.562	0.616	0.389	100	81	93	2	-34	2.96E-06	1.1E-05	>1.00E-04	
K-562	0.362	1.209	1.242	1.204	1.201	0.608	0.303	104	100	99	27	-11	4.62E-06	1.1E-05	>1.00E-04	
MOLT-4	0.686	1.747	1.766	1.731	1.780	1.196	0.966	104	99	103	46	16	9.20E-06	1.1E-05	>1.00E-04	
RPMI-6226	0.735	1.450	1.406	1.355	1.423	1.015	0.711	94	67	96	39	-3	6.46E-06	1.1E-05	>1.00E-04	
SR	0.486	0.856	0.776	0.827	0.686	0.444	0.318	78	92	54	-9	-25	1.16E-06	1.1E-05	>1.00E-04	
Non-Small Cell Lung Cancer																
A549/ATCC	0.377	1.362	1.405	1.289	1.366	0.942	0.579	104	93	101	57	21	1.59E-05	1.1E-05	>1.00E-04	
EA9X	0.402	0.931	0.961	0.896	0.695	0.680	0.523	105	93	93	52	23	1.16E-05	1.1E-05	>1.00E-04	
HOP-62	0.391	0.953	0.893	0.896	0.670	0.699	0.507	69	90	85	55	21	1.38E-05	1.1E-05	>1.00E-04	
HOP-92	0.761	1.260	1.251	1.202	1.220	1.013	1.142	98	86	92	51	76	>1.00E-04	1.1E-05	>1.00E-04	
NCI-H226	0.607	0.890	0.914	0.902	0.895	0.671	0.524	106	104	102	23	-14	4.52E-06	1.1E-05	>1.00E-04	
NCI-H23	0.419	1.205	1.156	1.170	1.063	0.664	0.634	94	96	85	57	27	1.66E-05	1.1E-05	>1.00E-04	
NCI-H322M	0.624	1.629	1.615	1.607	1.616	1.366	0.799	99	96	99	74	17	2.65E-05	1.1E-05	>1.00E-04	
NCI-H460	0.161	1.131	1.177	1.144	1.171	0.609	0.319	105	101	104	45	15	6.24E-06	1.1E-05	>1.00E-04	
NCI-H522	0.413	0.954	1.000	0.969	0.965	0.561	0.360	106	103	102	27	-13	4.96E-06	1.1E-05	>1.00E-04	
Colon Cancer																
COLO 205	0.326	1.242	1.250	1.163	1.006	0.450	0.265	101	94	74	13	-13	2.49E-06	1.1E-05	>1.00E-04	
HCC-2998	0.590	1.321	1.301	1.316	1.349	0.944	0.514	97	100	104	46	-13	9.33E-06	1.1E-05	>1.00E-04	
HCT-116	0.161	1.238	1.291	1.234	1.249	0.616	0.341	105	100	101	42	17	7.39E-06	1.1E-05	>1.00E-04	
HCT-15	0.317	1.751	1.602	1.646	1.477	0.960	0.626	90	93	61	45	22	7.20E-06	1.1E-05	>1.00E-04	
HT29	0.166	0.659	0.840	0.833	0.663	0.592	0.219	97	96	101	61	6	1.63E-05	1.1E-05	>1.00E-04	
KM12	0.294	1.232	1.237	1.193	1.227	0.672	0.464	101	96	99	40	20	6.66E-06	1.1E-05	>1.00E-04	
SW-620	0.156	1.016	1.016	0.955	0.947	0.652	0.466	100	93	92	56	36	2.24E-05	1.1E-05	>1.00E-04	
CNS Cancer																
SF-268	0.463	1.301	1.309	1.262	1.166	0.696	0.647	101	98	86	52	46	2.07E-05	1.1E-05	>1.00E-04	
SF-295	0.400	1.077	1.029	0.933	0.903	0.551	0.401	93	79	74	22	0	2.94E-06	1.1E-05	>1.00E-04	
SF-539	0.367	0.666	0.802	0.833	0.619	0.393	0.176	63	90	87	1	-55	2.66E-06	1.1E-05	6.29E-05	
SNE-19	0.571	1.452	1.464	1.481	1.490	1.013	0.769	101	103	104	50	23	1.02E-05	1.1E-05	>1.00E-04	
SNE-75	0.361	0.628	0.626	0.633	0.510	0.341	0.420	99	102	52	-11	16	1.06E-06	1.1E-05	>1.00E-04	
U251	0.199	0.651	0.868	0.625	0.629	0.396	0.255	103	96	97	30	9	5.02E-06	1.1E-05	>1.00E-04	
Melanoma																
LOX IMVI	0.191	1.076	0.996	0.997	0.945	0.593	0.416	91	91	85	45	25	7.64E-06	1.1E-05	>1.00E-04	
MALME-3M	0.464	0.952	0.949	0.934	0.677	0.691	0.594	99	96	84	46	27	6.09E-06	1.1E-05	>1.00E-04	
M14	0.196	0.527	0.496	0.521	0.522	0.337	0.214	90	96	96	43	5	7.35E-06	1.1E-05	>1.00E-04	
SK-MEL-2	0.746	1.404	1.406	1.377	1.356	1.007	0.624	101	96	93	40	12	6.41E-06	1.1E-05	>1.00E-04	
SK-MEL-28	0.576	1.271	1.313	1.201	1.106	0.913	0.675	106	90	76	46	43	6.77E-06	1.1E-05	>1.00E-04	
SK-MEL-5	0.034	1.051	1.156	1.123	0.765	0.402	0.319	110	107	72	36	26	4.11E-06	1.1E-05	>1.00E-04	
UACC-257	0.536	1.126	1.159	1.155	0.975	0.919	1.057	105	105	74	65	66	>1.00E-04	1.1E-05	>1.00E-04	
UACC-62	0.577	1.780	1.836	1.739	1.633	0.959	0.796	104	96	67	31	16	4.65E-06	1.1E-05	>1.00E-04	
Ovarian Cancer																
IGR-OV1	0.515	1.761	1.666	1.697	1.663	1.362	1.032	94	95	94	66	42	4.76E-05	1.1E-05	>1.00E-04	
OVCA-3	0.293	0.811	0.825	0.806	0.745	0.452	0.359	103	99	67	31	13	4.57E-06	1.1E-05	>1.00E-04	
OVCA-4	0.467	1.061	1.120	1.016	1.043	0.967	0.631	106	90	94	65	59	>1.00E-04	1.1E-05	>1.00E-04	
OVCA-5	0.393	0.862	0.893	0.862	0.667	0.662	0.514	107	104	105	62	26	2.12E-05	1.1E-05	>1.00E-04	
OVCA-6	0.267	0.947	0.932	0.937	0.911	0.743	0.393	96	99	95	70	19	2.45E-05	1.1E-05	>1.00E-04	
SK-OV-3	0.466	0.975	0.994	0.923	0.965	0.666	0.519	104	90	96	43	10	7.56E-06	1.1E-05	>1.00E-04	
Renal Cancer																
786-0	0.200	0.913	1.003	0.886	0.644	0.543	0.436	113	96	90	46	33	9.01E-06	1.1E-05	>1.00E-04	
A496	1.061	1.567	1.566	1.546	1.569	1.331	1.179	104	96	100	51	20	1.11E-05	1.1E-05	>1.00E-04	
ACHN	0.406	1.396	1.401	1.430	1.436	1.206	0.923	100	103	104	61	52	>1.00E-04	1.1E-05	>1.00E-04	
CAKI-1	0.466	0.940	0.916	0.806	0.792	0.636	0.616	95	72	69	36	52	3.77E-06	1.1E-05	>1.00E-04	
RX-393	0.704	1.545	1.504	1.469	1.362	1.136	1.054	95	93	81	52	42	1.44E-05	1.1E-05	>1.00E-04	
SN12C	0.371	1.274	1.196	1.213	1.201	0.936	0.734	91	93	92	63	40	3.67E-05	1.1E-05	>1.00E-04	
TK-10	0.627	1.221	1.172	1.207	1.122	1.167	0.977	92	96	83	91	59	>1.00E-04	1.1E-05	>1.00E-04	
UO-31	0.593	1.442	1.440	1.370	1.431	1.226	1.030	100	92	99	75	52	>1.00E-04	1.1E-05	>1.00E-04	
Prostate Cancer																
PC-3	0.302	1.096	1.130	1.066	1.042	0.636	0.395	104	99	93	42	12	7.00E-06	1.1E-05	>1.00E-04	
DU-145	0.339	1.061	1.064	1.036	1.016	0.465	0.334	100	97	94	17	-1	3.75E-06	1.1E-05	>1.00E-04	
Breast Cancer																
MCF7	0.423	1.174	1.207	1.176	1.130	0.706	0.771	104	100	94	36	46	6.12E-06	1.1E-05	>1.00E-04	
MCF7/ADR-RES	0.330	0.907	0.917	0.897	0.685	0.664	0.462	102	96	97	61	23	1.96E-05	1.1E-05	>1.00E-04	
MDA-MB-231/ATCC	0.406	0.960	0.945	0.780	0.605	0.764	0.529	97	67	72	64	22	2.16E-05	1.1E-05	>1.00E-04	
HS 578T	0.664	1.319	1.334	1.262	1.261	1.096	1.243	103	92	67	51	63	>1.00E-04	1.1E-05	>1.00E-04	
MDA-MB-435	0.320	0.961	0.969	0.910	0.564	0.239	0.109	101	69	40	-25	-66	6.22E-07	1.1E-05	4.05E-05	
MDA-N	0.214	0.752	0.670	0.651	0.275	0.049	0.042	65	61	11	-77	-60	2.60E-07	1.1E-05	4.94E-06	
BT-549	0.476	0.822	0.901	0.649	0.609	0.636	0.609	123	106	96	46	36	6.41E-06	1.1E-05	>1.00E-04	
T-47D	0.711	2.002	1.964	1.999	1.622	1.470	1.709	99	100	66	59	77	>1.00E-04	1.1E-05	>1.00E-04	



## Mean Grapes



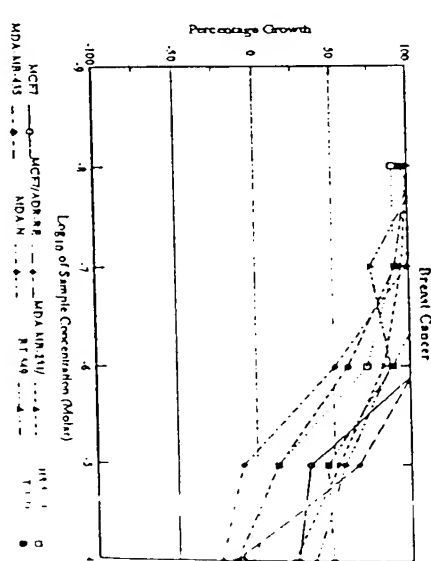
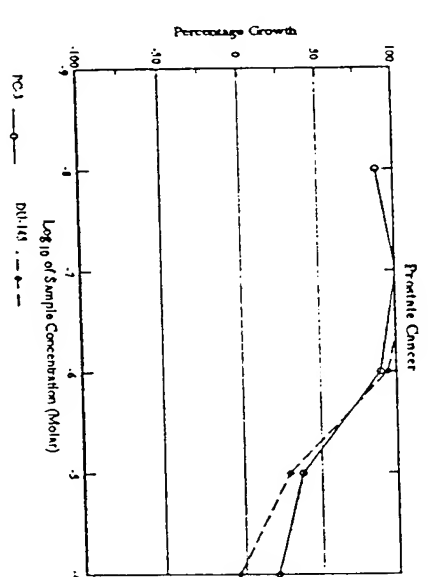
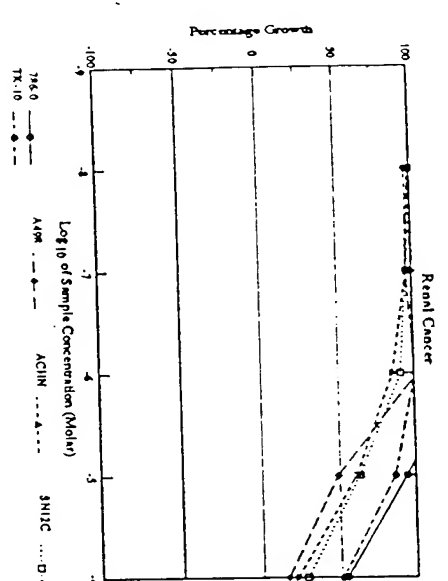
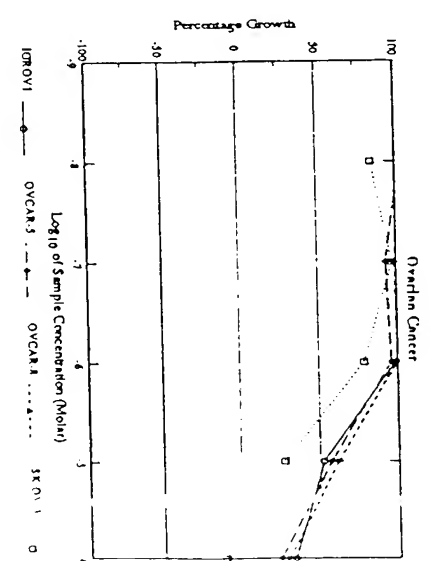
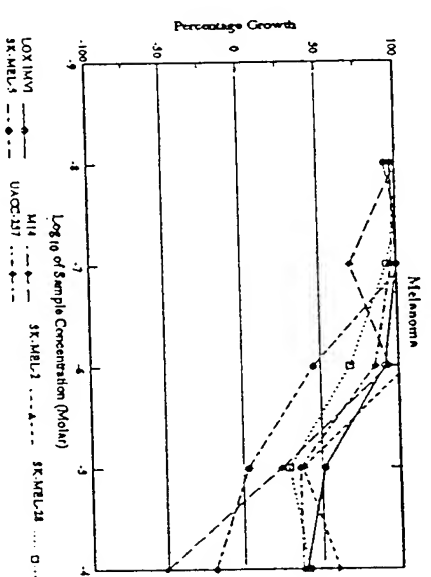
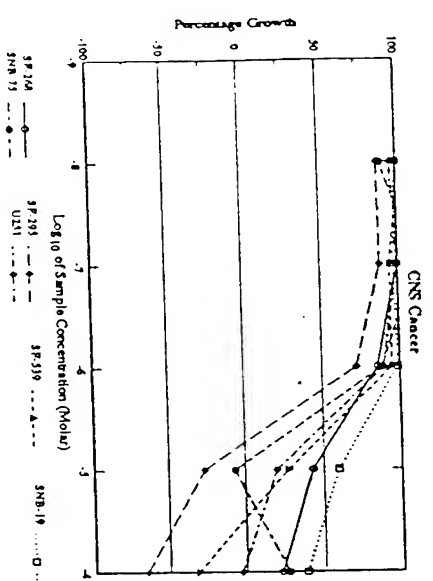
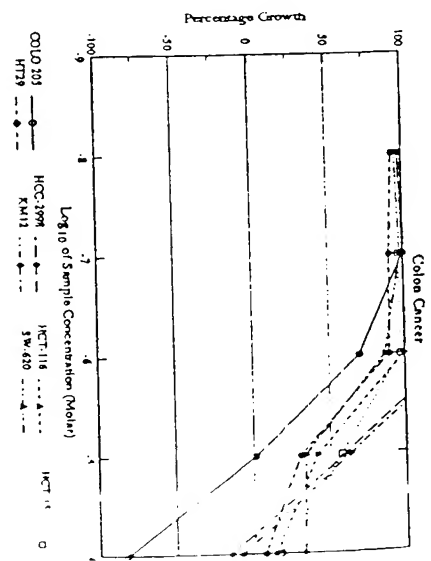
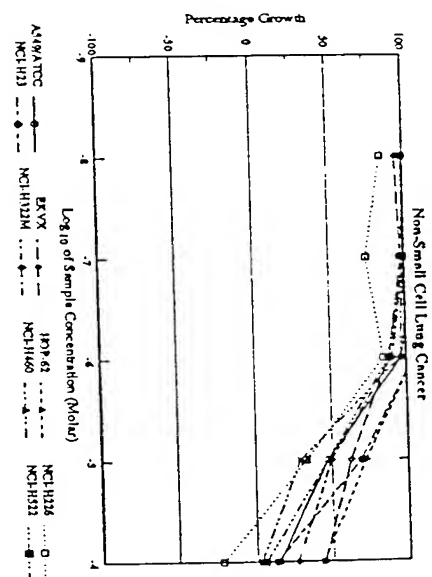
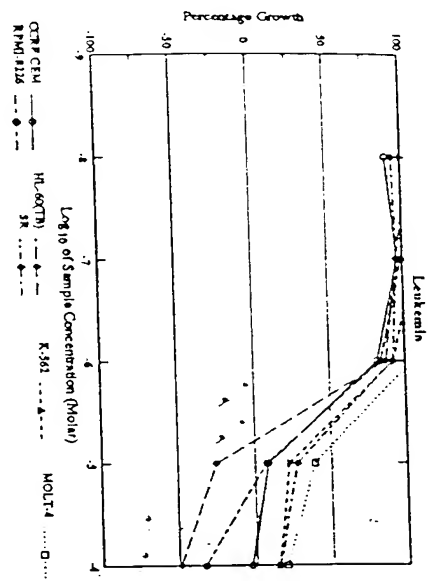


# National Cancer Institute Developmental Therapeutics Program

## In-Vitro Testing Results

Cell Line: D-673163-1/0-1/3	Experiment ID: 9409SC89	Test Type: 8	Units: Molar
Test Date: October 27, 1994	Test Date: September 26, 1994	QNS:	MC:
Cell Line: OCTAHYDROPHOMOPSIN A	Stain Reagent: Dual-Pass	SSPL: 0FLC	

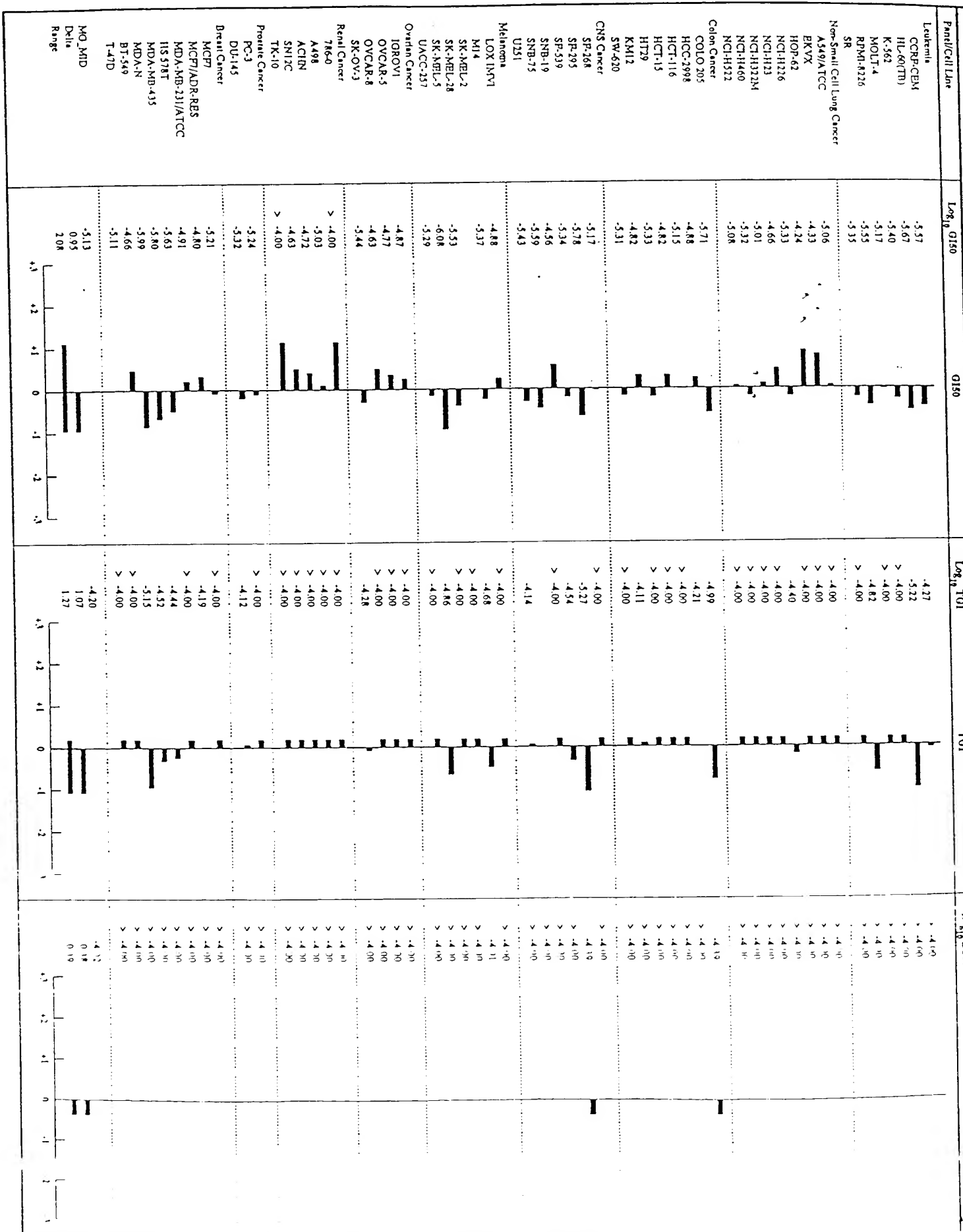
el/Cell Line	Time Zero	Ctrl	Log10 Concentration					Percent Growth					GI50	TGI	LC50	
			-6.0	-7.0	-8.0	-9.0	-10.0	-6.0	-7.0	-8.0	-9.0	-10.0				
kemia																
CCRF-CEM	0.250	0.846	0.785	0.823	0.736	0.301	0.242	90	96	62	8	-3	2.71E-06	5.32E-05	>1.00E-04	
HL-60 (TB)	0.213	0.710	0.741	0.666	0.649	0.160	0.109	106	93	86	-25	-49	2.16E-06	5.99E-06	>1.00E-04	
K-562	0.129	0.726	0.727	0.774	0.662	0.261	0.215	100	108	92	22	14	4.00E-06	>1.00E-04	>1.00E-04	
MOLT-4	0.281	1.162	1.167	1.266	1.202	0.624	0.454	103	112	105	39	20	6.79E-06	>1.00E-04	>1.00E-04	
RPMI-8226	0.196	0.784	0.841	0.776	0.692	0.239	0.131	110	99	84	7	-33	2.79E-06	1.51E-05	>1.00E-04	
SR	0.236	1.562	1.483	1.509	1.456	0.600	0.432	94	96	92	27	15	4.46E-06	>1.00E-04	>1.00E-04	
-Small Cell Lung Cancer																
A549/ATCC	0.361	1.402	1.450	1.442	1.370	0.849	0.507	105	104	97	47	14	6.66E-06	>1.00E-04	>1.00E-04	
ERVK	0.686	1.701	1.649	1.673	1.583	1.317	1.133	95	97	86	62	44	4.64E-05	>1.00E-04	>1.00E-04	
HOP-62	0.834	1.738	1.762	1.704	1.779	1.486	1.222	103	96	105	72	43	5.72E-05	>1.00E-04	>1.00E-04	
NCI-H226	0.591	0.929	0.879	0.843	0.876	0.702	0.461	85	75	85	33	-22	4.68E-06	3.97E-05	>1.00E-04	
NCI-H23	0.455	1.575	1.684	1.778	1.623	1.229	0.593	110	116	104	69	12	2.17E-05	>1.00E-04	>1.00E-04	
NCI-H322M	0.556	1.391	1.394	1.383	1.313	0.969	0.775	100	99	91	49	26	5.70E-06	>1.00E-04	>1.00E-04	
NCI-H460	0.219	1.062	1.058	1.051	1.028	0.462	0.239	99	99	96	29	2	4.63E-06	>1.00E-04	>1.00E-04	
NCI-H522	0.434	1.065	1.059	1.059	0.992	0.435	0.468	99	99	88	.	5	6.40E-06	>1.00E-04	>1.00E-04	
on Cancer																
COLO 205	0.208	0.975	0.956	0.972	0.745	0.216	0.037	97	100	70	1	-62	1.95E-06	1.03E-05	4.11E-05	
HCC-2996	0.262	0.873	1.115	1.211	1.084	0.687	0.221	.	.	135	.	-16	1.33E-05	6.16E-05	>1.00E-04	
HCT-116	0.230	1.417	1.467	1.447	1.413	0.721	0.392	104	103	100	41	14	7.11E-06	>1.00E-04	>1.00E-04	
HCT-15	0.717	2.847	2.756	2.780	2.787	1.946	1.060	96	97	97	58	16	1.53E-05	>1.00E-04	>1.00E-04	
HT29	0.146	0.817	0.772	0.755	0.749	0.351	0.191	93	91	90	30	6	4.67E-06	>1.00E-04	>1.00E-04	
KM12	0.907	1.983	2.066	2.236	2.404	1.586	0.833	108	124	139	63	-6	1.53E-05	7.68E-05	>1.00E-04	
SW-620	0.140	0.690	0.664	0.678	0.618	0.325	0.319	95	96	87	34	32	4.92E-06	>1.00E-04	>1.00E-04	
Cancer																
SF-268	0.367	1.294	1.305	1.290	1.161	0.764	0.572	101	100	86	43	22	6.78E-06	>1.00E-04	>1.00E-04	
SF-295	0.554	1.239	1.154	1.158	1.046	0.405	0.194	88	66	72	-27	-65	1.67E-06	5.35E-06	4.04E-05	
SF-539	0.517	1.486	1.496	1.437	1.440	0.780	0.353	101	95	95	27	-32	4.62E-06	2.89E-05	>1.00E-04	
SNB-19	0.587	1.709	1.704	1.675	1.696	1.254	1.014	100	97	99	59	36	2.76E-05	>1.00E-04	>1.00E-04	
SNB-75	0.367	0.801	0.757	0.850	0.753	0.342	0.483	90	111	89	-7	27	2.55E-06	.	>1.00E-04	
U251	0.191	0.874	0.848	0.869	0.806	0.327	0.185	96	99	90	20	-3	3.72E-06	7.30E-05	>1.00E-04	
anoma																
LOX IMVI	0.279	1.142	1.113	1.138	1.069	0.724	0.617	97	100	92	52	39	1.33E-05	>1.00E-04	>1.00E-04	
M4	0.250	0.509	0.510	0.431	0.493	0.313	0.122	101	70	94	24	-51	4.27E-06	2.10E-05	9.70E-05	
SK-MEL-2	0.563	1.347	1.436	1.420	1.391	0.858	1.033	111	109	106	38	60	.	>1.00E-04	>1.00E-04	
SK-MEL-28	0.305	0.940	0.972	0.901	0.743	0.489	0.564	105	94	69	29	41	2.96E-06	>1.00E-04	>1.00E-04	
SK-MEL-5	0.354	1.476	1.402	1.533	0.864	0.388	0.267	93	105	45	3	-19	6.35E-07	1.37E-05	>1.00E-04	
UACC-257	0.709	1.939	1.910	1.898	1.755	1.149	1.159	96	97	85	36	37	5.14E-06	>1.00E-04	>1.00E-04	
rian Cancer																
IGROV1	0.346	1.494	1.567	1.579	1.480	0.947	0.733	106	107	99	52	34	1.35E-05	>1.00E-04	>1.00E-04	
OVCAR-5	0.377	0.957	0.968	0.921	0.933	0.710	0.518	102	94	96	57	24	1.68E-05	>1.00E-04	>1.00E-04	
OVCAR-8	0.550	2.624	2.741	2.595	2.626	1.832	1.160	106	99	100	62	19	2.32E-05	>1.00E-04	>1.00E-04	
SK-OV-3	0.423	0.862	0.796	0.851	0.770	0.543	0.377	85	96	79	27	-11	5.63E-06	5.21E-05	>1.00E-04	
ial Cancer																
786-0	0.434	1.623	1.873	1.963	2.204	1.748	1.181	104	110	127	95	54	>1.00E-04	>1.00E-04	>1.00E-04	
A498	0.561	0.917	0.933	0.917	0.926	0.734	0.617	104	100	103	49	16	5.42E-06	>1.00E-04	>1.00E-04	
ACHN	0.306	1.169	1.158	1.138	1.048	0.830	0.495	99	96	86	61	22	1.89E-05	>1.00E-04	>1.00E-04	
SN12C	0.636	1.662	1.651	1.625	1.575	1.283	0.924	99	96	92	63	26	2.36E-05	>1.00E-04	>1.00E-04	
TK-10	0.399	1.068	1.047	1.042	1.073	0.980	0.739	97	96	101	87	51	>1.00E-04	>1.00E-04	>1.00E-04	
state Cancer																
PC 3	0.657	2.351	2.083	2.359	2.104	1.852	1.447	99	100	90	37	21	5.76E-06	>1.00E-04	>1.00E-04	
DO-145	0.459	1.560	1.616	1.654	1.506	0.776	0.440	101	106	91	19	-4	4.77E-06	7.50E-05	>1.00E-04	
ast Cancer																
MCF7	0.259	1.183	1.323	1.253	1.261	0.576	0.498	115	106	106	34	26	6.13E-06	>1.00E-04	>1.00E-04	
MCF-7/Ash-Pan	0.541	1.344	1.355	1.301	1.347	1.036	0.455	107	106	104	46	15	2.58E-05	4.52E-05	>1.00E-04	
MDA-MB-231/ATCC	0.614	1.646	1.654	1.611	1.447	1.166	0.850	100	91	83	50	22	1.23E-05	>1.00E-04	>1.00E-04	
HS 578T	0.586	1.116	1.062	1.066	0.968	0.655	0.525	90	90	72	13	-10	2.37E-06	3.61E-05	>1.00E-04	
MDA-MB-435	0.283	1.202	1.206	1.119	0.827	0.405	0.243	100	91	59	13	-14	1.58E-06	3.05E-05	>1.00E-04	
MDA-N	0.332	1.546	1.555	1.532	0.946	0.303	0.255	101	99	51	-9	-22	1.02E-06	7.69E-06	>1.00E-04	
BT-549	0.606	1.199	1.266	1.049	1.124	0.943	0.625	111	75	67	57	37	2.21E-05	>1.00E-04	>1.00E-04	
T-47D	0.775	2.137	2.071	2.441	1.986	1.393	1.431	95	122	89	45	48	7.81E-06	>1.00E-04	>1.00E-04	



# Mean Graphs

Report Date: October 24, 1994

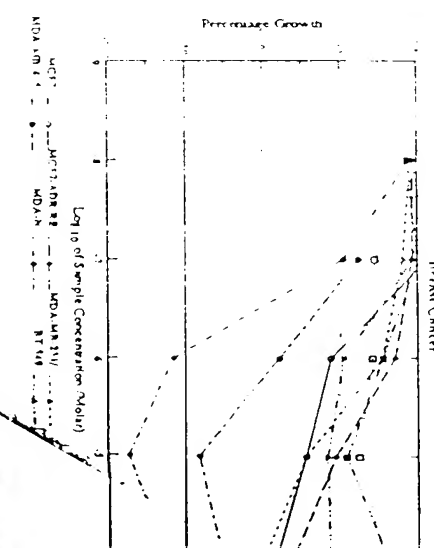
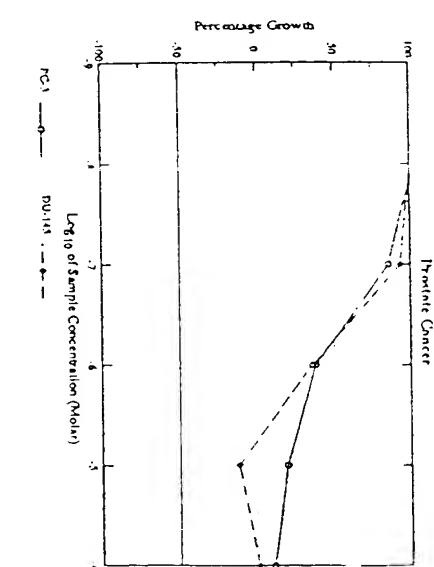
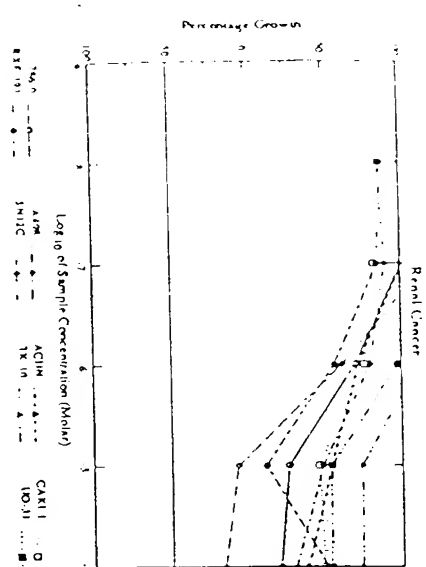
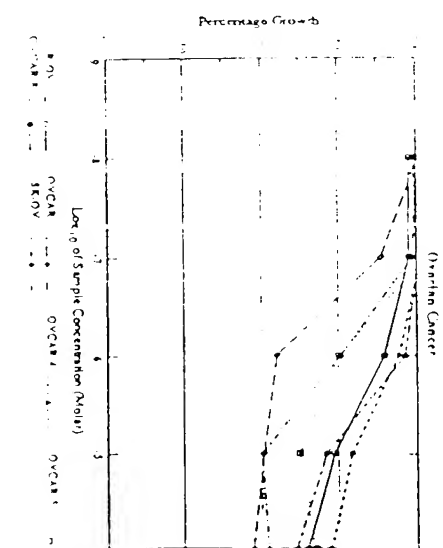
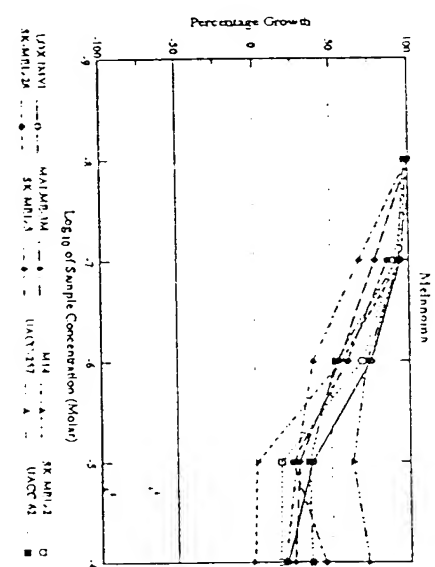
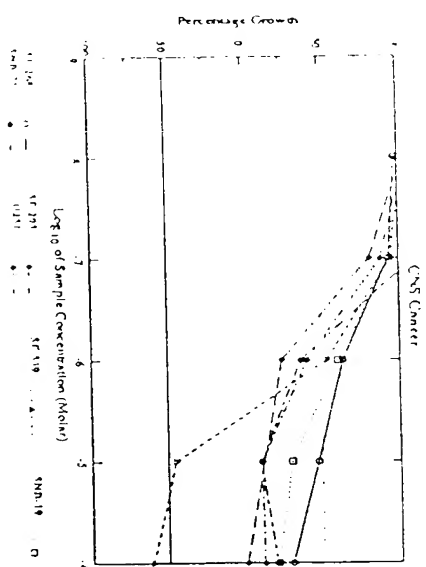
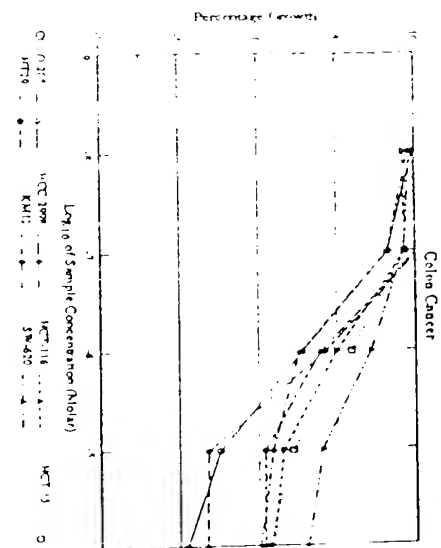
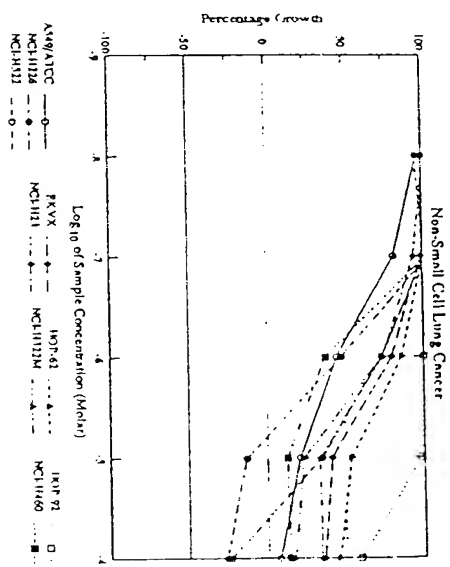
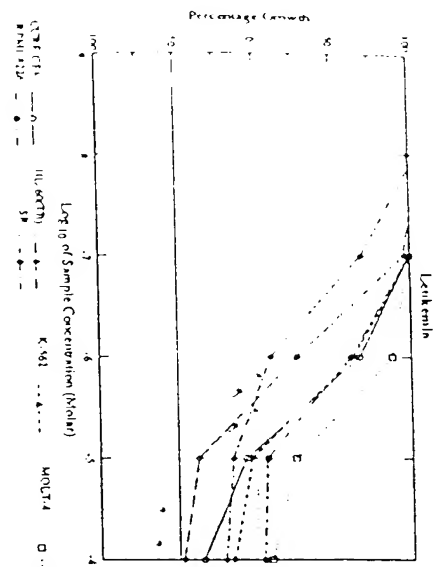
Test Date: September 20, 1993



# National Cancer Institute Developmental Therapeutics Program In-Vitro Testing Results

NCI: D-673165-K/0-2/12	Experiment ID: 9502RM16	Test Type: 8	Units: Molar
Report Date: March 28, 1995	Test Date: February 13, 1995	QNS: SHP	MC:
OMI: Phomopsinamine A	Stain Reagent: Dual-Pass	SSPL: 0FLC	

Panel/Cell Line	Time		Log10 Concentration						Percent Growth						GI50	TG1	LC50
	Zero	Ctrl	-6.0	-7.0	-8.0	-9.0	-10.0	-11.0	-12.0	-13.0	-14.0	-15.0	-16.0	-17.0			
Leukemia																	
CCRF-CEM	0.634	1.761	1.771	1.754	1.367	0.591	0.416	101	88	67	45	24	14	1.49E-06	8.09E-06	>1.00E-04	
HL-60 (TE)	0.592	1.622	1.679	1.580	0.864	0.371	0.312	106	88	16	-35	-45	4	4.56E-07	2.60E-06	>1.00E-04	
K-562	0.382	1.370	1.370	1.366	1.003	0.369	0.326	100	100	23	-3	-10	1	1.56E-06	6.92E-06	>1.00E-04	
MOLT-4	0.686	1.845	1.893	1.837	1.702	0.981	0.793	104	88	88	25	8	4	4.02E-06	>1.00E-04	>1.00E-04	
RPMI-8226	0.735	1.569	1.648	1.580	1.256	0.790	0.769	107	88	61	6	4	4	1.60E-06	>1.00E-04	>1.00E-04	
SR	0.486	1.022	1.056	0.859	0.536	0.412	0.366	104	88	8	-15	-11	1	2.04E-07	2.37E-06	>1.00E-04	
Non-Small Cell Lung Cancer																	
A549/ATCC	0.377	1.334	1.309	1.156	0.604	0.577	0.447	97	88	44	11	1	1	7.06E-07	>1.00E-04	>1.00E-04	
EKVX	0.402	1.029	.	1.021	0.900	0.659	0.629	.	88	78	41	32	1	5.81E-06	>1.00E-04	>1.00E-04	
HOP-62	0.391	0.893	0.873	0.696	0.822	0.655	0.619	96	100	16	53	45	1	2.70E-05	>1.00E-04	>1.00E-04	
HOP-92	0.761	1.116	1.214	1.187	1.116	1.110	0.970	126	100	100	98	39	1	>1.00E-04	>1.00E-04	>1.00E-04	
NCI-H226	0.607	0.664	0.900	0.674	0.729	0.525	0.446	104	104	47	-14	-17	1	8.95E-07	5.99E-06	>1.00E-04	
NCI-H23	0.419	1.166	1.174	1.124	0.966	0.669	0.674	101	88	73	33	34	1	3.65E-06	>1.00E-04	>1.00E-04	
NCI-H322M	0.624	1.566	1.602	1.576	1.312	0.844	0.785	104	100	73	23	17	1	2.90E-06	>1.00E-04	>1.00E-04	
NCI-H460	0.161	1.263	1.266	1.267	0.584	0.316	0.329	100	100	37	12	-14	1	6.35E-07	>1.00E-04	>1.00E-04	
NCI-H522	0.413	1.073	1.071	1.084	0.691	0.642	0.316	100	100	72	35	-24	1	3.93E-06	3.94E-05	>1.00E-04	
Colon Cancer																	
COLO 205	0.326	1.333	1.317	1.156	0.606	0.246	0.179	98	88	38	-24	-45	1	3.91E-07	3.40E-06	>1.00E-04	
HCC-2996	0.590	1.266	.	1.284	0.876	0.402	0.396	.	100	43	-32	-33	1	7.55E-07	3.73E-06	>1.00E-04	
HCT-116	0.161	1.304	1.219	1.229	0.729	0.343	0.256	93	98	50	16	8	1	9.87E-07	>1.00E-04	>1.00E-04	
HCT-15	0.317	1.667	.	1.574	1.115	0.614	0.393	.	98	56	22	6	1	1.76E-06	>1.00E-04	>1.00E-04	
HT29	0.166	0.631	0.620	0.836	0.429	0.193	0.190	98	100	40	4	4	1	6.76E-07	>1.00E-04	>1.00E-04	
IM12	0.294	1.445	1.397	1.230	0.595	0.397	0.301	96	88	26	9	1	1	3.70E-07	>1.00E-04	>1.00E-04	
SW-620	0.156	0.691	0.669	0.637	0.660	0.453	0.364	97	88	72	40	31	1	4.69E-06	>1.00E-04	>1.00E-04	
CNS Cancer																	
SF-266	0.463	1.431	1.410	1.366	1.079	0.920	0.755	98	88	64	47	30	1	6.77E-06	>1.00E-04	>1.00E-04	
SF-295	0.400	1.036	1.055	0.919	0.554	0.400	0.400	103	88	24	1	0	1	3.53E-07	>1.00E-04	>1.00E-04	
SF-539	0.387	0.860	0.869	0.636	0.640	0.213	0.153	102	88	53	-45	-40	1	1.06E-06	3.46E-06	2.09E-05	
SNB-19	0.571	1.365	1.372	1.336	1.063	0.617	0.742	96	88	61	30	31	1	2.22E-06	>1.00E-04	>1.00E-04	
SNB-75	0.381	0.626	0.664	0.650	0.470	0.406	0.430	116	100	36	10	10	1	6.51E-07	>1.00E-04	>1.00E-04	
U251	0.199	0.893	0.920	0.615	0.481	0.273	0.279	104	88	41	11	12	1	6.39E-07	>1.00E-04	>1.00E-04	
Melanoma																	
LOX IMVI	0.191	0.962	.	0.942	0.766	0.467	0.357	.	98	75	37	11	1	4.66E-06	>1.00E-04	>1.00E-04	
MALME-3M	0.464	1.037	1.035	0.912	0.780	0.631	0.610	100	88	55	29	25	1	1.57E-06	>1.00E-04	>1.00E-04	
M14	0.196	0.565	0.564	0.552	0.407	0.201	0.194	99	88	56	1	-1	1	1.31E-06	3.46E-05	>1.00E-04	
SK-MEL-2	0.746	1.366	1.364	1.311	1.161	0.853	0.846	99	88	70	17	16	1	2.40E-06	>1.00E-04	>1.00E-04	
SK-MEL-26	0.576	1.166	.	1.102	0.944	0.725	0.653	.	88	60	24	45	1	1.94E-06	>1.00E-04	>1.00E-04	
SK-MEL-5	0.034	1.014	1.005	0.702	0.406	0.296	0.223	99	88	36	27	19	1	4.00E-07	>1.00E-04	>1.00E-04	
UACC-257	0.536	1.297	1.320	1.246	1.091	1.021	1.095	103	88	73	64	15	1	>1.00E-04	>1.00E-04	>1.00E-04	
UACC-62	0.577	1.662	1.621	1.770	1.255	1.029	1.047	97	88	53	35	37	1	1.43E-06	>1.00E-04	>1.00E-04	
Ovarian Cancer																	
IGR-OV1	0.515	1.689	1.633	1.631	1.445	1.071	0.864	95	88	79	47	30	1	8.26E-06	>1.00E-04	>1.00E-04	
OVCAR-3	0.293	0.905	0.910	0.766	0.353	0.301	0.276	101	88	10	1	-6	1	2.54E-07	1.53E-05	>1.00E-04	
OVCAR-4	0.467	1.176	1.160	1.189	1.095	0.662	0.767	98	100	69	59	45	1	4.29E-05	>1.00E-04	>1.00E-04	
OVCAR-5	0.393	0.667	0.861	0.914	0.641	0.514	0.565	99	100	50	25	35	1	1.02E-06	>1.00E-04	>1.00E-04	
OVCAR-6	0.267	1.196	.	1.211	1.126	0.656	0.475	.	100	52	42	22	1	6.95E-06	>1.00E-04	>1.00E-04	
SK-OV-3	0.466	1.011	1.012	0.997	0.747	0.470	0.490	100	88	51	0	4	1	1.06E-06	>1.00E-04	>1.00E-04	
Renal Cancer																	
786-O	0.200	0.949	1.006	0.955	0.716	0.396	0.350	106	100	69	26	30	1	2.79E-06	>1.00E-04	>1.00E-04	
A496	1.061	1.413	.	1.470	1.263	1.007	0.910	.	100	61	-7	-16	1	1.45E-06	7.91E-06	>1.00E-04	
ACHN	0.406	1.460	1.476	1.476	1.157	0.970	0.603	102	100	71	53	38	1	1.66E-05	>1.00E-04	>1.00E-04	
CAKI-1	0.466	0.950	0.861	0.663	0.630	0.665	0.701	86	88	75	45	46	1	6.95E-06	>1.00E-04	>1.00E-04	
RXF-393	0.704	1.582	1.473	1.447	1.195	0.602	1.147	88	88	56	11	50	1	.	>1.00E-04	>1.00E-04	
SN12C	0.371	1.335	1.201	1.236	1.133	0.633	0.660	86	88	79	46	30	1	6.61E-06	>1.00E-04	>1.00E-04	
TK-10	0.627	1.091	.	1.090	1.142	0.967	0.965	.	100	111	73	73	1	>1.00E-04	>1.00E-04	>1.00E-04	
UO-31	0.593	1.476	1.492	1.513	1.452	1.066	1.060	102	104	57	53	53	1	>1.00E-04	>1.00E-04	>1.00E-04	
Prostate Cancer																	
PC-3	0.302	1.164	1.163	1.039	0.627	0.471	0.392	102	88	36	20	10	1	5.54E-07	>1.00E-04	>1.00E-04	
DU-145	0.339	1.029	1.031	0.964	0.563	0.299	0.344	100	88	35	-12	1	1	5.60E-07	.	>1.00E-04	
Breast Cancer																	
MCF7	0.423	1.139	1.163	1.160	0.733	0.620	0.490	103	100	43	27	9	1	7.82E-07	>1.00E-04	>1.00E-04	
MCF7/ADR-RES	0.330	2.037	1.016	1.012	0.929	0.656	0.476	97	88	65	46	31	1	6.02E-06	>1.00E-04	>1.00E-04	
MDA-MB-231/ATCC	0.406	0.926	0.905	0.676	0.606	0.550	0.416	96	88	76	27	2	1	3.45E-06	>1.00E-04	>1.00E-04	
HS 578T	0.664	1.396	1.409	1.247	1.239	1.193	1.273	102	100	70	62	1	1	>1.00E-04	>1.00E-04	>1.00E-04	
MDA-MB-435	0.320	1.266	.	0.910	0.421	0.187	0.233	.	88	10	-42	-27	1	1.65E-07	1.59E-06	>1.00E-04	
MDA-N	0.214	0.746	0.716	0.469	0.090	0.029	0.076	94	88	-56	-66	-65	1	1.03E-07	2.95E-07	6.46E-07	
BT-549	0.476	0.606	0.639	0.794	0.646	0.612	0.617	110	88	52	41	43	1	1.43E-06	>1.00E-04	>1.00E-04	
T-47D	0.721	2.153	2.053	2.154	1.616	1.464	1.643	93	100	77	54	16	1	>1.00E-04	>1.00E-04	>1.00E-04	



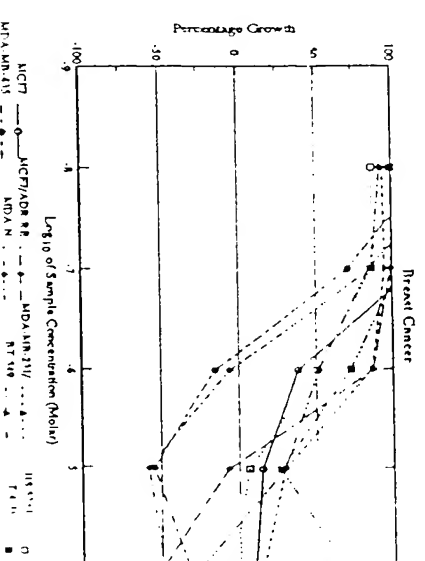
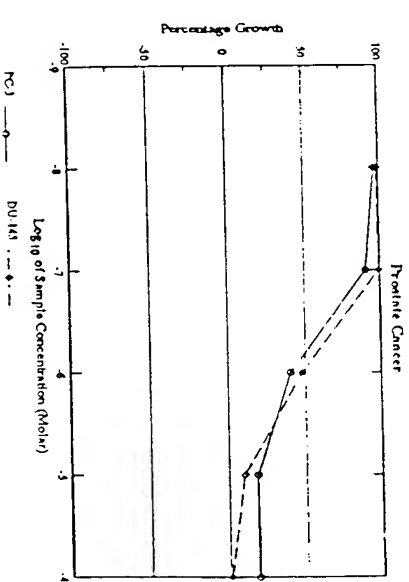
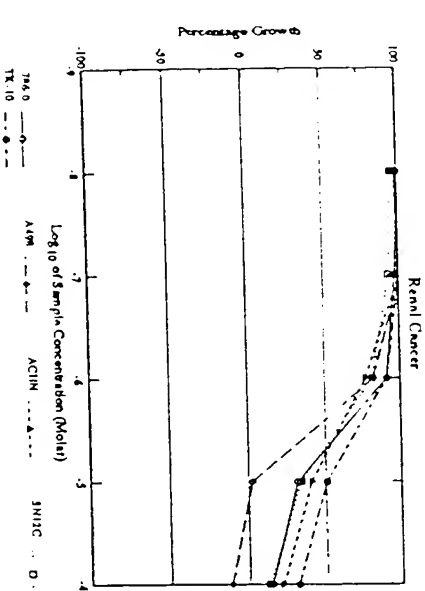
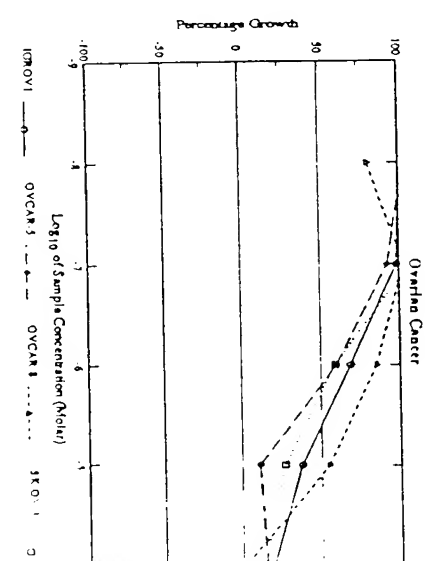
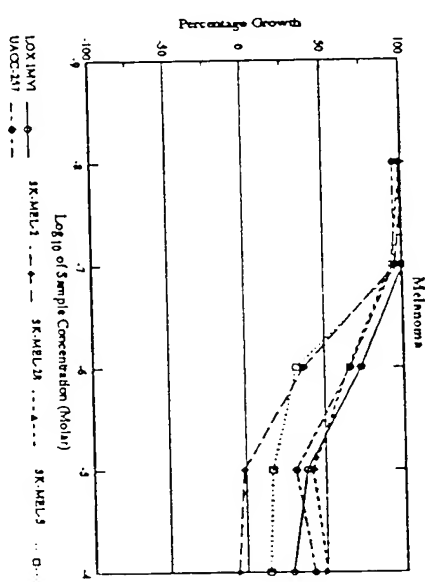
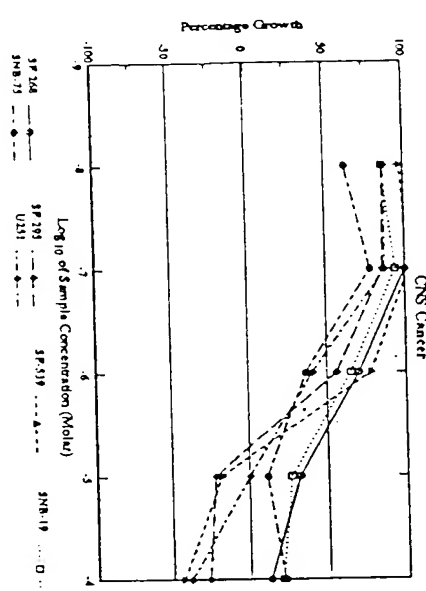
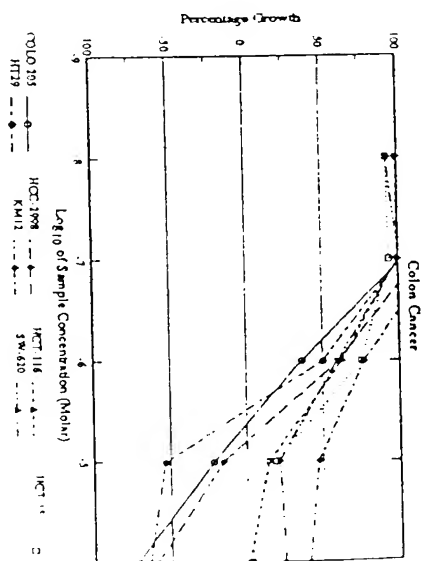
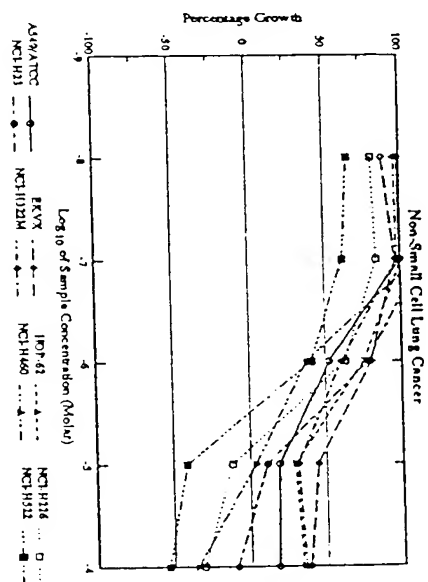
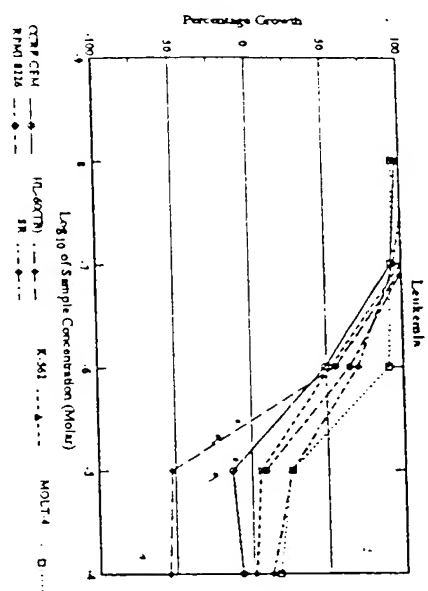


# National Cancer Institute Developmental Therapeutics Program

## In-Vitro Testing Results

Contract: L 573165 -K/0-1/5	Experiment ID: 9409SC89	Test Type: 8	Units: Molar
Report Date: October 27, 1994	Test Date: September 26, 1994	QNS:	MC:
MI: PHOMOPSINAMINE A	Stain Reagent: Dual-Pass	SSPL: 0FLC	

Insel/Cell Line	Time		Log10 Concentration						Percent Growth						GI50	TGI	LC50
	Zero	Ctrl	-8.0	-7.0	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	0.0	1.0	2.0				
<b>Leukemia</b>																	
CCRF-CEM	0.250	0.793	0.779	0.757	0.516	0.216	0.232	97	93	49	-13	-7		9.50E-07	6.21E-06	>1.00E-04	
HL-60 (TB)	0.213	0.691	0.710	0.706	0.481	0.101	0.096	104	103	56	-53	-55		1.13E-06	3.28E-06	9.47E-06	
K-562	0.129	0.762	0.795	0.764	0.463	0.165	0.141	105	100	53	6	2		1.14E-06	>1.00E-04	>1.00E-04	
MOLT-4	0.281	1.366	1.312	1.293	1.266	0.563	0.469	95	93	91	26	17		4.27E-06	>1.00E-04	>1.00E-04	
RPMI-8226	0.196	0.876	0.919	0.899	0.640	0.255	0.258	106	103	65	9			1.86E-06			
SR	0.238	1.679	1.741	1.612	1.256	0.614	0.414	104	95	71	26	12		2.92E-06	>1.00E-04	>1.00E-04	
<b>Non-Small Cell Lung Cancer</b>																	
A549/ATCC	0.361	1.610	1.591	1.608	1.016	0.596	0.584	99	100	53	19	16		1.19E-06	>1.00E-04	>1.00E-04	
ERVX	0.688	1.691	1.579	1.652	1.493	1.128	1.074	69	96	80	44	38		6.79E-06	>1.00E-04	>1.00E-04	
HOP-62	0.834	1.662	1.701	1.666	1.457	1.074	1.115	105	101	75	29	34		3.51E-06	>1.00E-04	>1.00E-04	
NCI-H226	0.591	1.104	1.010	1.024	0.913	0.521	0.409	82	64	63	-12	-31		1.48E-06	6.95E-06	>1.00E-04	
NCI-H23	0.455	1.521	1.625	1.647	1.288	0.571	0.413	110	112	78	11	-9		2.62E-06	3.48E-05	>1.00E-04	
NCI-H322M	0.556	1.478	1.444	1.454	1.114	0.842	0.867	96	97	61	31	36		2.27E-06	>1.00E-04	>1.00E-04	
NCI-H460	0.219	1.146	1.184	1.252	0.563	0.252	0.142	104	111	37	4	-35		6.72E-07	1.23E-05	>1.00E-04	
NCI-H522	0.434	1.347	1.035	1.000	0.803	0.254	0.201	66	62	40	-42	-54		3.58E-07	3.11E-06	4.88E-05	
<b>Ovarian Cancer</b>																	
COLO 205	0.208	1.003	1.074	1.023	0.495	0.163	0.059	109	103	36	-22	-72		6.17E-07	4.19E-06	3.65E-05	
HCC-2998	0.262	0.891	0.947	0.974	0.642	0.221	0.107	109	113	60	-16	-59		1.37E-06	6.23E-06	6.16E-05	
HCT-116	0.230	1.465	1.453	1.458	1.003	0.406	0.237	99	99	63	14	1		1.82E-06	>1.00E-04	>1.00E-04	
HCT-15	0.717	2.858	2.699	2.730	2.337	1.121	0.760	93	94	76	19	2		2.83E-06	>1.00E-04	>1.00E-04	
HT29	0.148	0.793	0.801	0.803	0.470	0.069	0.054	101	102	50	-53	-64		9.97E-07	3.04E-06	9.27E-06	
KM12	0.907	2.189	2.312	2.489	1.895	1.506	1.448	110	123	77	47	40		7.81E-06	>1.00E-04	>1.00E-04	
SW-620	0.140	0.828	0.778	0.831	0.549	0.283	0.306	93	100	59	21	24		1.75E-06	>1.00E-04	>1.00E-04	
<b>NS Cancer</b>																	
ST-268	0.367	1.284	1.294	1.284	1.008	0.659	0.484	101	100	70	32	13		3.33E-06	>1.00E-04	>1.00E-04	
SF-295	0.554	1.381	1.270	1.263	1.016	0.431	0.405	87	86	56	-22	-27		1.19E-06	5.18E-06	>1.00E-04	
SF-539	0.517	1.568	1.540	1.592	1.331	0.423	0.291	97	102	77	-18	-44		1.94E-06	6.45E-06	>1.00E-04	
SNB-19	0.567	1.633	1.488	1.571	1.265	0.866	0.800	86	94	65	27	20		2.44E-06	>1.00E-04	>1.00E-04	
SNB-75	0.367	0.901	0.701	0.763	0.560	0.428	0.483	63	76	36	11	22		4.66E-07	>1.00E-04	>1.00E-04	
U251	0.191	0.834	0.753	0.753	0.451	0.193	0.117	87	87	40	0	-39		6.25E-07	1.02E-05	>1.00E-04	
<b>Melanoma</b>																	
LOX IMVI	0.279	1.064	1.050	1.071	0.852	0.576	0.503	98	101	73	38	28		4.55E-06	>1.00E-04	>1.00E-04	
SK-MEL-2	0.563	1.498	1.516	1.462	0.905	0.555	0.530	102	96	37	-1	-6		5.96E-07	9.18E-06	>1.00E-04	
SK-MEL-28	0.305	0.975	0.974	0.929	0.740	0.584	0.636	100	93	65	42	49		4.37E-06	>1.00E-04	>1.00E-04	
SK-MEL-5	0.354	1.681	1.704	1.671	0.778	0.574	0.542	102	99	32	17	14		5.39E-07	>1.00E-04	>1.00E-04	
UACC-257	0.709	2.006	1.941	1.943	1.564	1.111	1.252	95	95	66	31	42		2.85E-06	>1.00E-04	>1.00E-04	
<b>Ovarian Cancer</b>																	
IGROV1	0.346	1.479	1.482	1.460	1.125	0.769	0.565	100	96	69	37	19		3.96E-06	>1.00E-04	>1.00E-04	
OVCAR-5	0.377	0.870	0.881	0.834	0.671	0.432	0.451	102	93	60	11	15		1.58E-06	>1.00E-04	>1.00E-04	
OVCAR-8	0.550	1.404	1.238	1.426	1.278	1.016	0.570	81	103	85	55	2		1.22E-05	>1.00E-04	>1.00E-04	
SK-OV-3	0.423	0.902	0.908	0.935	0.705	0.551	0.490	101	107	59	27	14		1.88E-06	>1.00E-04	>1.00E-04	
<b>Renal Cancer</b>																	
786-0	0.434	2.015	2.010	1.977	1.875	0.929	0.664	100	96	91	31	15		4.87E-06	>1.00E-04	>1.00E-04	
A498	0.561	0.980	1.024	0.985	0.906	0.570	0.498	111	101	82	2	-11		2.54E-06	1.47E-05	>1.00E-04	
ACHN	0.306	1.259	1.245	1.263	1.041	0.692	0.508	99	100	77	41	21		5.50E-06	>1.00E-04	>1.00E-04	
SN12C	0.636	1.672	1.632	1.603	1.483	0.981	0.770	96	95	82	33	13		4.52E-06	>1.00E-04	>1.00E-04	
TK-10	0.399	0.995	0.984	0.998	0.944	0.700	0.585	98	100	91	50	31		1.05E-05	>1.00E-04	>1.00E-04	
<b>Prostate Cancer</b>																	
PC-3	0.952	3.445	3.372	3.208	1.952	1.405	1.413	97	90	40	18	18		6.36E-07	>1.00E-04	>1.00E-04	
DU-145	0.459	1.595	1.581	1.567	0.999	0.572	0.467	99	99	46	10	1		8.97E-07	>1.00E-04	>1.00E-04	
<b>Breast Cancer</b>																	
MCFT	0.259	1.158	1.285	1.306	0.600	0.390	0.347	114	116	38	15	10		7.02E-07	>1.00E-04	>1.00E-04	
MCFT/ADR-RES	0.517	1.304	1.327	1.297	1.205	0.481	0.267	103	99	87	-7	-48		2.49E-06	8.44E-06	>1.00E-04	
MDA-MB-231/ATCC	0.614	1.602	1.551	1.559	1.468	0.902	0.761	95	96	86	29	15		4.32E-06	>1.00E-04	>1.00E-04	
HS 578T	0.586	1.164	1.091	1.067	0.877	0.623	0.558	87	87	50	6	-5		1.02E-06	3.67E-05	>1.00E-04	
MDA-MB-435	0.283	0.780	0.912	0.636	0.240	0.128	0.191	126	71	-15	-55	-32		1.75E-07	6.66E-07		
MDA-N	0.332	1.424	1.348	1.278	0.312	0.139	0.169	93	87	-6	-56	-49		2.49E-07	8.61E-07		
BT-549	0.606	0.902	1.036	0.858	0.758	0.692	0.457	145	85	51	29	-25		1.14E-06	3.47E-05	>1.00E-04	
T-47D	0.775	1.915	1.907	1.973	1.601	1.072	1.547	99	105	72	26	68			>1.00E-04	>1.00E-04	

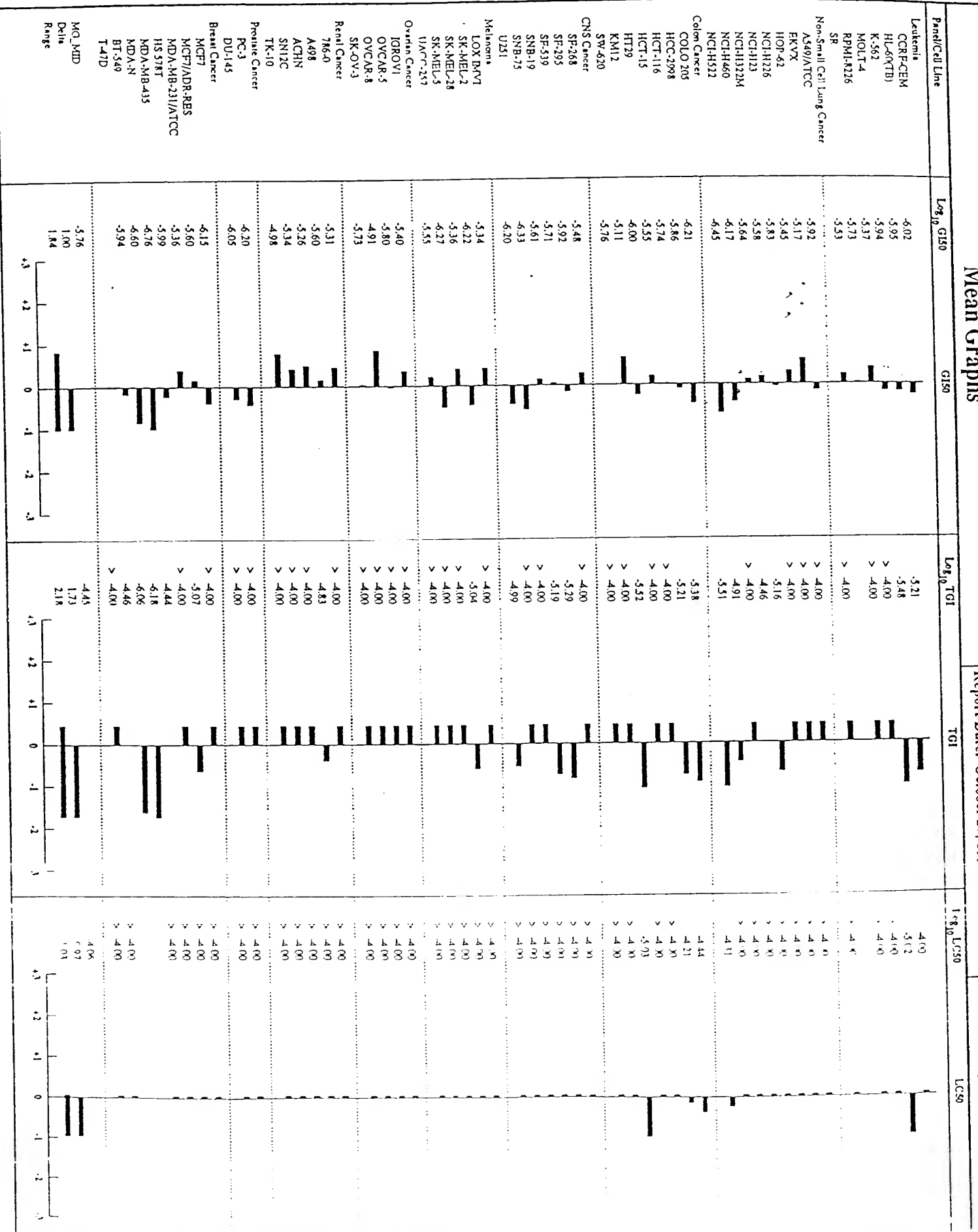




## Mean Graphs

Report Date: October 21, 1977

Last Date: September 20, 1977



Example 2

The following data show the effect of phomopsin A on several human cancer cell lines growing *in vivo* in hollow fibres inserted subcutaneously and intraperitoneally in athymic mice, as employed by NCI to assess the *in vivo* anticancer potential of compounds (Hollingshead *et al.*, 1995). Significant cell growth inhibition and cytotoxic activity is demonstrated.

# Capillary Hollow Fiber Assay for 673162

Report printed on 07-MAY-97

EXPT NO: HF591-0-HF  
SEX: F  
EVALUATION DATE: 15-DEC-95  
SOURCE/TUNE: 1  
HOST: Athymic Nudes  
SOURCE: APA  
IMPLANT DATE: 06-DEC-95  
STAGING DATE: 11-DEC-95

TREATMENT				4T/C			
Grp No.	NSC No.	Dose/Units	Pl	No. of Mice	No. of Fibers	LOX INVI	COLO 205
57	D-673162	30.00 mg/kg/dose	IP QD x 4, Da, 3	3	3	>100	IP SC IP SC
58	D-673162	20.00 mg/kg/dose	IP QD x 4, Da, 3	3	3	>100	IP SC IP SC

## VEHICLES

Grp 57 -> NSC # 673162 (Dose = 30.00 mg/kg/dose) Inj. Vol.: 0.1 ml/10gm body wt  
Grp 58 -> NSC # 673162 (Dose = 20.00 mg/kg/dose) Inj. Vol.: 0.1 ml/10gm body wt

## COMMENTS for HF591-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

Capillary Hollow Fiber Assay for 673162

Report printed on 07-MAY-97

EXPT NO: HF590-0-HF				EVALUATION DATE: 15-DEC-95				HOST...: Athymic Nudes				IMPLANT DATE....: 07-DEC-95									
SEX.....: F				SOURCE/LINE....: 1				SOURCE: APA				STAGING DATE....: 11-DEC-95									
TREATMENT												%T/C									
								NCI-H23				MDA-MB-231									
Grp No.		NSC No.		Dose/Units		Rt		Schedule		No. of Mice		No. of Fibers		IP		SC		IP		SC	
57		D-673162		30.00 mg/kg/dose		IP		QD X 4, Day 4		3		3		81		96		46		77	
58		D-673162		20.00 mg/kg/dose		IP		QD X 4, Day 4		3		3		>100		>100		44		46	

VEHICLES

Grp 57 ->	NSC	673162/	1 (Dose=	30.00)	: in Saline + Tween 80 (0.05%)	(Unknown)	Inj. Vol.:0.1 ml/10gm body wt
Grp 58 ->	NSC	673162/	1 (Dose=	20.00)	: in Saline + Tween 80 (0.05%)	(Unknown)	Inj. Vol.:0.1 ml/10gm body wt

COMMENTS for HF590-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

Capillary Hollow Fiber Assay for 673162

Report printed on 01-APR-96

41

EXPT NO: HF590-0-HF		EVALUATION DATE: 15-DEC-95		HOST...: Athymic Nudes		IMPLANT DATE...: 07-DEC-95					
SEX...: F		SOURCE/LINE...: 1		SOURCE: APA		STAGING DATE...: 11-DEC-95					
TREATMENT											
Grp No.	NSC No.	Dose/Units	Rt	Schedule	No. of Mice	WT/C (Net Growth)					
						NCI-H23		MDA-MB-231		SW-620	
						IP	SC	IP	SC	IP	SC
57	D-673162	30.00 mg/kg/dose	IP	QD - 4, Day 4	3	3	76	94	30	63	>100
58	D-673162	20.00 mg/kg/dose	IP	QC - 4, Da. 4	3	3	>100	>100	28	29	>100

VEHICLES

Grp 57 -> NSC 1 673162/ 1 (Dose= 30.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt  
 Grp 58 -> NSC 1 673162/ 1 (Dose= 20.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt

COMMENTS for HF590-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

Capillary Hollow Fiber Assay for 673162

Report printed on 01-APR-96

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EXPT NO: HF591-0-HF				EVALUATION DATE: 15-DEC-95				HOST...: Athymic Nudes				IMPLANT DATE...: 08-DEC-95			
SEX...: F				SOURCE/LINE...: 1				SOURCE: APA				STAGING DATE...: 11-DEC-95			
TREATMENT												WT/C (Net Growth)			
Grp No.	NSC No.	Dose/Units	Rt	Schedule	No. of Mice	No. of Fibers	LOX IMVI		COLO 205		OVCAR-3				
							IP	SC	IP	SC	IP	SC			
57	D-673162	30.00 mg/kg/dose	IP	QD X 4, Day 3	3	3	>100	>100	59	34	-18	22			
58	D-673162	20.00 mg/kg/dose	IP	QD X 4, Day 3	3	3	29	>100	48	81	-15	>100			

VEHICLES				Inj. Vol.:0.1 ml/10gm body wt	
Grp 57 ->	NSC #	673162/	1 (Dose= 30.00) : In Saline + Tween 80 (0.05%)	(Unknown)	Inj. Vol.:0.1 ml/10gm body wt
Grp 58 ->	NSC #	673162/	1 (Dose= 20.00) : In Saline + Tween 80 (0.05%)	(Unknown)	Inj. Vol.:0.1 ml/10gm body wt

VEHICLES

Grp 57 -> NSC # 673162/ 1 (Dose= 30.00) : in Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt  
 Grp 58 -> NSC # 673162/ 1 (Dose= 20.00) : in Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt

COMMENTS for HF591-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

## Report printed on 07-MAY-97

IMPLANT DATE...: 13-NOV-95  
STAGING DATE...: 13-NOV-95

HOST.: Athymic Nudes  
SOURCE: APA

DECLASSIFICATION DATE: 17-NOV-95  
 BY SP-6/BJH/STW/STW: 1

EXPT NO: H581-0-HF

Grp No.	NSC No.	TREATMENT				No. of Mile	No. of Fibers	NCI-H522			UACC-62			M251
		Dose/Units	Rt	Schedule	IP			SC	IP	SC	IP	SC		
C-673162		30.00 mg/kg dose	IP	20 x 1, Ca, 4	3	2	85	96	100	92	>100	95		
					3	3								
C-673162		20.00 mg/kg dose	IP	20 x 1, Ca, 4	3	2	70	>100	97	90	90	99		
					3	3								

## VEHICLES

Group	Dose	In Saline + Tween 80	(Unknown)	Inj. Vol.: 0.1 ml/10gm body wt
7 -> NSC #	673162		(0.05%)	
8 -> NSC #	673162		(0.05%)	

## COMMENTS for HF581-0-HF

this experiment is within acceptable quality control parameters and is considered valid.

Capillary Hollow Fiber Assay for 673162

Report printed on 01-APR-96

EXPT NO: HF581-0-HF			EVALUATION DATE: 17-NOV-95			HOST...: Athymic Nudes			IMPLANT DATE...:			
SEX...: F			SOURCE/LINE...: 1			SOURCE: APA			STAGING DATE...: 13-NOV-95			
TREATMENT						WT/C (Net Growth)						
Grp No.	NSC No.	Dose/Units	Rt	Schedule	No. of Mice	NCI-H522		UACC-62		IP	SC	
						IP	SC	IP	SC			
7	D-673162	30.00 mg/kg/dose	IP	QD X 4, Day 4	3	2	59	91	100	81	>100	91
					3	3						
8	D-673162	20.00 mg/kg/dose	IP	QD X 4, Day 4	3	2	18	>100	95	79	83	98
					3	3						

VEHICLES

Grp 7 -> NSC # 673162/ 1 (Dose= 30.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt  
 Grp 8 -> NSC # 673162/ 1 (Dose= 20.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt

COMMENTS for HF581-0-HF

This experiment is within acceptable quality control parameters and is considered valid.



# Capillary Hollow Fiber Assay for 673162

Report printed on 07-MAY-97

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EXPT NO: HF582-0-HF		INSTITUTION DATE: 17-NOV-95		HOST...: Athymic Nudes		IMPLANT DATE...:	
SEX...: F		SOURCE/LINE...: 1		SOURCE: APA		STAGING DATE...: 13-NOV-95	
TREATMENT:							
Grp No.	NSC No.	Dose/Unit's	Rt	Schedule	No. of Mice		SF-295
					No. of Fibers		
3	D-673162	30.00 mg/kg/dose	IP	QD x 4, Day 4	3	2	MDA-MB-435
					3	3	
4	D-673162	20.00 mg/kg/dose	IP	QD x 4, Day 4	3	3	OVCAR-5
					3	3	

## VEHICLES

Grp 7 ->	NSC	673162/	1 (Dose= 30.00)	In Saline + Tween 80 (0.05%)	(Unknown)	Inj. Vol.: 0.1 ml/10gm body wt
Grp 8 ->	NSC	673162/	1 (Dose= 30.00)	In Saline + Tween 80 (0.05%)	(Unknown)	Inj. Vol.: 0.1 ml/10gm body wt

## COMMENTS for HF582-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

# Capillary Hollow Fiber Assay for 673162

Report printed on 01-APR-96

EXPT NO: HF582-0-HF				EVALUATION DATE: 17-NOV-95				HOST...: Athymic Nudes				IMPLANT DATE....:									
SEX....: F				SOURCE/LINE....: 1				SOURCE: APA				STAGING DATE....: 13-NOV-95									
TREATMENT												WT/C (Net Growth)									
												OVCAR-5				SF-295					
												MDA-MB-435									
Grp No.		NSC No.		Dose/Units		Rt		Schedule		No. of Mice		No. of Fibers		IP		SC		IP		SC	
7		D-673162.		30.00 mg/kg/dose		IP		QD X 4, Day 4		3		2		38		90		68		>100	
										3		3				58					
8		D-673162		20.00 mg/kg/dose		IP		QD X 4, Day 4		3		3		87		82		>100		>100	
														74		94					

## VEHICLES

Grp 7 -> NSC # 673162/ 1 (Dose= 30.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/100gm body wt  
 Grp 8 -> NSC # 673162/ 1 (Dose= 20.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/100gm body wt

## COMMENTS for HF582-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

Capillary Hollow Fiber Assay for 673162

Report printed on 01-APR-96

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EXPT NO: HF580-0-HF		EVALUATION DATE: 09-NOV-95		HOST...: Athymic Nudes		IMPLANT DATE....:						
SEX....: F		SOURCE/LINE....: 1		SOURCE: APA		STAGING DATE....: 05-NOV-95						
TREATMENT												
Grp No.	NSC No.	Dose/Units	Rt	Schedule	No. of Mice	No. of Fibers	%T/C (Net Growth)					
							LOX IMVI		COLO 205		OVCAR-3	
							IP	SC	IP	SC	IP	SC
1	D-673162	45.00 mg/kg/dose	IP	QC x 4, Day 2	3	1	98	80	>100	64	61	>100
8	D-673162	30.00 mg/kg/dose	IP	QC x 4, Day 2	3	3	88	85	58	86	25	37

VEHICLES

Grp 7 -> NSC # 673162/ 1 (Dose= 45.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt  
 Grp 8 -> NSC # 673162/ 1 (Dose= 30.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt

COMMENTS for HF580-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

# Capillary Hollow Fiber Assay for 673162

Report printed on 01-APR-96

EXPT NO: HF579-0-HF  
SEX: F  
EVALUATION DATE: 09-NOV-95  
SOURCE/LINE: 1  
HOST: Athymic Nudes  
SOURCE: APA  
IMPLANT DATE: 02-NOV-95  
STAGING DATE: 05-NOV-95

TREATMENT						W/C (Net Growth)						
Grp No.	NSC No.	Dose/Units	Rt	Schedule	No. of Mice	No. of Fibers	NCI-H23		MDA-MB-231		SW-620	
							IP	SC	IP	SC	IP	SC
7	D-673162	45.00 mg/kg/dose	IP	QD X 4, Day 3	3	2	44	-41	>100	>100	78	78
8	D-673162	30.00 mg/kg/dose	IP	QD X 4, Day 3	3	3	60	21	99	>100	97	86

## VEHICLES

Grp 7 -> NSC # 673162/ 1 (Dose= 45.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt  
Grp 8 -> NSC # 673162/ 1 (Dose= 30.00) : In Saline + Tween 80 (0.05%) (Unknown) Inj. Vol.:0.1 ml/10gm body wt

## COMMENTS for HF579-0-HF

This experiment is within acceptable quality control parameters and is considered valid.

# Capillary Hollow Fiber Assay for 673162

Report printed on 07-May-97

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EXP NO: HF580-0-HF		VALUATION DATE: 09-NOV-95		HOST...: Athymic Nudes		IMPLANT DATE....:		
SEX....: F		CRSE TIME....: 1		SOURCE: APA		STAGING DATE....: 05-NOV-95		
TREATMENT				ST/C				
Exp No.	NSC No.	Dose/Units	Rt	Schedule	LOX IMVI		COLO 205	
					IP	SC	IP	SC
D-673162		45.00 mg/kg/dose	IF	Q1 x 4, Day 2	98	84	>100	72
D-673162		30.00 mg/kg/dose	IF	Q1 x 4, Day 2	90	88	67	89
							79	>100
							60	66

**Capillary Hollow Fiber Assay for 673162**

Report printed on 07-MAY-97

EXPT NO: HF579-0-HF		EVALUATION DATE: 09-NOV-95		HOST...: Athymic Nudes		IMPLANT DATE....: 02-NOV-95						
SEX.....: F		SOURCE/LINE.....: 1		SOURCE: APA		STAGING DATE....: 05-NOV-95						
TREATMENT												
Grp No.	NSC No.	Dose/Units	Rt	Schedule	No. of Mice	No. of Fibers	NCI-H23		MDA-MB-231		SW-620	
							IP	SC	IP	SC		
7	D-673162	45.00 mg/kg/dose	IP	QD X 4, Day 3	3	2	68	38	>100	>100	82	83
8	D-673162	30.00 mg/kg/dose	IP	QD X 4, Day 3	3	3	77	65	99	>100	98	89

Finally, it is to be understood that various alterations, modifications and/or additions may be introduced into the composition and/or arrangement of steps previously described without departing from the spirit or ambit of the invention.

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DATED: 29 September, 1999

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10 **INDUSTRIAL RESEARCH ORGANISATION**

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